THE ATTITUDE OF STUDENTS TOWARDS THEIR SECONDARY SCHOOL SUBJECTS.

Olin E. Robbins

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THE ATTITUDE OF STUDENTS TOWARDS THEIR SECONDARY SCHOOL SUBJECTS

Submitted by

Olin E. Robbins

(B.S. in Ed., Boston University,1947)

In partial fulfillment of requirements
for the degree of Master of Education
1948

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CHAPTER I

THE PROBLEM

Introduction.-- The success or failure of many high school students is determined to a large extent by the attitudes that they develop toward their school subjects, their teachers, their school administrators and their fellow students. As Kingsley [1] states,

> Lack of confidence in ability to memorize, dislike for school work, dislike for the teacher or the school in general, unwillingness to cooperate, antagonisms, the feeling that there is no sense or value in learning the material are some of the attitudes which may affect unfavorably the child's effort to learn.

A review of research and of the writings of educational leaders shows that student attitudes toward school and school subjects are influenced by the interests that they develop, the values that they see in their educational activities, and the difficulties that they encounter. Garrison [2] writes,

> The nature of the child's experiences determines in a large measure not only his interests and attitudes but the direction of growth which interests and attitudes will take. The individuals interests and attitudes at the time he enters high school are not static but are dynamic.

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[1] Howard L. Kingsley, The Nature and Conditions of Learning. Prentice-Hall, Inc., New York, 1946, p. 309.

[2] Karl C. Garrison, "Adolescent Interests in Relation To Instruction," "High School Journal ,19: January 1936, p. 14.

Leonard V. Koos [1] writes,

> The experience of success is essential to mental health, and it is unfortunate that pupils should attempt work at which they cannot succeed.

William Kilpatrick [2] also writes on this topic.

> In the half hour when a boy is facing his grammar lesson he is not only learning or failing to learn that specific lesson but he is also fixing or unfixing an attitude toward the subject of grammar, another attitude towards his teacher, another toward schools and another towards himself with reference to grammar and school and his ability and disposition in general.

The majority of the investigators have used questionnaires to measure attitudes. Although, the questionnaire expresses an opinion instead of predicable behavior it has been used with considerable success and it seems to be the most satisfactory means of identifying and measuring the intensity of attitudes.

The problem.-- The purpose of this study was to determine the attitude of students toward the value, degree of interest and difficulty of subjects they were studying in secondary school, and to discover the relationship between these judgments and the sex of the students, the curriculum the students were following and the consistency of these judgments from school to school.

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[1] Leonard V. Koos, Administering the Secondary School, The World Book Company. Yonkers, New York, 1940, p. 183.

[2] William Head Kilpatrick, Foundations of Method, The Macmillan Company, New York, 1932, p. 10.

The scope of the study.-- "A Scale to Measure the Attitude of Students Toward Their School Subjects" was constructed and administered to the students in three Massachusetts secondary schools. A total of 1364 scales were completed by these students, of which 744 were completed by girls, and 584 by boys. The students following the College Preparatory Curriculum completed 834 scales, the Business Preparatory students completed 161 scales and the students taking the General Curriculum completed 354 scales.

The mean scale scores for Value, Interest and Difficulty were computed for each subject and for each school. The total for all schools were combined to obtain the total mean value scores for each subject. The mean scores for boys and girls were computed and compared as were the mean scores for the college, business and general curriculums. Rank-order correlations were computed to find the relationships between total Value, Interest and Difficulty. Rank-order correlations were also computed to compare the order of placement of subjects on the Value, Interest and Difficulty tables of the three schools.

CHAPTER II

A SUMMARY OF PREVIOUS RESEARCH

Many attitude and interest investigations are reported in the literature. Most of these reported investigations, however, do not give data on specific school subjects or subject areas and it is for this reason that they have been omitted from this chapter.

"Do Scales For Measuring Attitudes Have Any Significance" (1941)[1/]

Superintendent Claude Mitchell, of the West Newton, Pennsylvania public schools, reported in 1941 on a study he had made to determine the permanence of beliefs and attitudes that pupils hold towards education, school and school practices.

A two form, thirty-four statement attitude scale was constructed. Each statement expressed a sentiment about education, school or school practices. The students marked each statement in such a way as to signify agreement or disagreement.

Form A, of the scale was given to 3992 students, from grades nine to twelve, in September. Form B, was

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[1/] Claude Mitchell, "Do Scales For Measuring Attitudes Have Any Significance," The Journal of Educational Research, 34; pp. 445-452, February 1946.

was given to the same students three months later.

Seventy-seven per cent expressed the same beliefs on Scale "B" as they had on Scale "A". The correlation coefficient between statements checked on Scale "A" and "Scale "B" was .71.

Claude Mitchell,[1] concluded that, "In light of his experiment and insofar as his conclusions were valid, it would seem that scales for measuring attitudes toward school and school practices have significance."

"A Scale For Measuring the Relative Difficulty of High School Subjects" (1939) [2]

L. G. Osborn, in 1939 reported on a study he had made to determine the relative difficulty of thirty-one secondary school subjects.

He defined difficulty as, "The sum total of a pupil's reactions or feelings about a subject with respect to the effort required, the time needed, the emotional blocking to be overcome, or to anything else that tends to prevent the attainment of what seems to him to be a satisfactory result".[3]

Thirty-one statements of difficulty were carefully chosen by 131 judges and scaled by using Thurstone's method of "equal appearing intervals." Statements were

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[1] Claude Mitchell, "Do Scales For Measuring Attitudes Have Any Significance," The Journal of Educational Research, 34: pp. 445-452, February 1946.

[2] L.G. Osborn, "A Scale For Measuring The Relative Difficulty of High School Subjects," The Journal of Educational Research 33: September 1939, P. 5

[3] Ibid., p. 6

chosen that had an interquartile range of two or less. These statements were then correlated with the judgments of fifty-one high school principals. The judgments of the fifty-one principals correlated +.85 with the statements chosen for the scale.

This scale was administered in nine Illinois secondary schools to 8795 students, taking thirty-one subjects from three-hundred sixty-three teachers. If a scale statement of difficulty applied to any subject he was taking, the student was asked to place a check mark opposite the statement and in the vertical column headed by the name of the particular subject to which the statement applied.

Table I, shows the relative rating of difficulty, for thirty-one secondary school subjects.

Table I THE RELATIVE DIFFICULTY RATING OF THIRTY-ONE SECONDARY SCHOOL SUBJECTS AS MEASURED BY OSBORN'S SCALE 1/

Subject	Median of Difficulty Rating
Algebra (advanced	20.3
Chemistry	19.7
Latin I	19.6
Geometry (plane)	19.0
Latin II	18.8

1/L.G. Osborn, "A Scale For Measuring the Relative Difficulty of High School Subjects, " The Journal of Educational Research 33: p. 5, September 1939.

Table I. (Concluded)

Physics	17.9
French II	17.4
Bookkeeping I	17.4
Spanish II	17.2
Geometry (solid)	16.7
French I	16.5
Spanish I	16.5
Shorthand I	16.4
Algebra I	15.8
Economics	15.8
Shorthand II	15.8
Civics	15.7
American History	14.9
English IV	14.8
English II	14.2
Modern History	14.
English III	13.7
English I	13.1
Sociology	12.6
Foods	12.6
Mechanical Drawing	12.2
Typing I	11.5
Typing II	11.
Clothing	10.
Woodworking	9.6

Osborn,[1] concluded, "The fact that in the opinions of the students certain subjects are more difficult than others simply means that certain factors, intellectual and otherwise, are for some reason or other more numerous or more intense in some subjects than in others."

"The Relationship Between Attitude Towards School

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[1] L.G. Osborn, "A Scale for Measuring the Relative Difficulty of High School Subjects," The Journal of Educational Research, 33: p. 1, September 1939.

Subjects and Certain Other Variables" (1934)[2/]

Richard M. Bateman, conducted a study in 1934, to discover pupil-subject attitudes and their relationship to other variables such as age, grade in school, curriculum choice, and names signed and unsigned.

Bateman, used- "An Experimental Generalized Master Scale: A Scale To Measure Attitude Toward Any School Subject" developed by Ella B. Silance and H. H. Remmers at Purdue University. This is a two form scale consisting of forty-five pairs of opinions that could apply to any school subject. The statements in this scale were carefully chosen by judges and scaled by using Thurstone's method of "equal appearing intervals," which is a scientific method of weighting statements.

The scale was given to groups of students in three distinctly separate types of high schools. These three high schools were located in Kokomo, Indiana; Monticello, Indiana, and Cincinnati, Ohio. One half of the students in each school received Form "A" and the other half Form "B."

No significant difference was found between the results for the different schools so the totals were combined for compiling all other data.

[2/] Richard M. Bateman, "The Relationship Between Attitude Towards School Subjects and Certain Other Variables," In Bulletin of Purdue University Studies in Higher Education XXVI, Directed and Edited by H.H.Remmers, Ph.D, December 1934, pp. 12-18.

In English the boys received a mean score of 7.68 which is represented on the Silance-Remmers Scale by the statement.."I am willing to spend my time studying this subject." The girls received a mean score of 8.15 in this subject which corresponds to the scale statement--"All lessons and all methods used in this subject are clear and definite." From these results Bateman concluded that the chances were 100 in 100 that girls will have a better attitude in English than boys.

No decided trends were found in the age variable, however, the fourteen-year-olds had the best attitude toward Algebra and Latin, while the seventeen-year-olds had the best attitude toward English, and the sixteen-year-olds the best attitude toward history.

No decided trends were found in the grade variable but the following groups had the best attitude in certain subjects: grade twelve, the best attitude in English; grade ten, the best attitude in history; grade eleven, the best attitude in algebra; grade ten, best attitude in Latin.

The girls had the best attitude toward English, Latin and Science, while the boys had the best attitude in history and algebra. Algebra was the best liked subject when all totals were used and Latin was the

least liked.

Bateman concluded that the results of the experiment showed few statistically significant differences between student attitudes toward subjects and the variables he used in his study. However, some attitude trends toward the subjects English, history, algebra, Latin and science could be discerned. The unfavorable or indifferent attitude toward Latin was pronounced in all communities.[1]

"Preferences as Indicators of Specific Academic Achievement" (1936)

John W. Dunlap reported a study in 1936 in which he had attempted to construct an academic preference questionnaire that would be predictive of academic achievement in a particular subject or subjects.

Dunlap analyzed the courses of study of the states of New York and New Jersey. From these courses of study he obtained 435 terms or phrases that appeared in both courses of study. Five judges arranged these 435 items into subject matter fields. These 435 items were then incorporated into a preference blank and given to two seventh-grade groups of one-hundred forty each. Each item was marked by the student to indicate

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[1] John Dunlap. "Preferences as Indicators of Specific Academic Achievement." The Journal of Educational Psychology 26; pp.411-415. November 1936.

that he liked it, was indifferent to it, disliked it, or that it was unknown to him. Following the administration of the preference blank these same groups were given The New Stanford Achievement Test.

Each item was evaluated for its predictive value by comparison with the scores on the corresponding scale-tests of The New Stanford Achievement Test. Weights for each of the four responses on the basis of the bi-serial correlation with the appropriate criterion were given. Two-hundred fourteen items were thus selected that showed a high predictive value for a given subject. These two-hundred fourteen items made up the refined preference blank.

The revised preference blank was administered to a group of 142 students in the last semester of the eighth grade, and to a group of 182 students in the first semester of the seventh grade. These same groups were also given the Metropolitan Achievement Test, New York Edition, Form A. The preference blank was scored for Arithmetic, geography, grammar, history, literature and general achievement. Correlation between preference scores for each academic subject and the corresponding sub-test of Metropolitan Achievement test was determined for each grade group.

The average correlation between achievement scores

and the preference scores were +.47 for the seventh grade and +.42 for the eighth grade.

Table 2 CORRELATIONS BETWEEN THE SUB-TESTS OF THE METROPOLITAN ACHIEVEMENT TESTS AND SUBJECT PREFERENCE SCORES OBTAINED ON THE DUNLAP SCALE. 1/

Subject	Grade	Correlative Coefficients
Literature	7	.56
	8	.35
Arithmetic	7	.31
	8	.30
Grammar	7	.48
	8	.45
History	7	.43
	8	.48
Total Achievement Score	7	.60
	8	.53

The correlations for literature fluctuate the most widely. The correlations for arithmetic indicate less promise of developing a preference blank for predicting arithmetic than for any of the other subjects.

Dunlap concludes, "That if the preliminary form of preference blank were extended and refined, the expressed preference of an individual could be used to increase materially the accuracy of prediction of future academic success at the junior high school level." The preferences for certain school subjects

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1/John Dunlap. "Preferences as Indicators of Specific Academic Achievement." *The Journal of Educational Psychology* 26; pp.411-415, November 1936.

not only give a clue as to previous success in these subjects, but also act as indicators of future success in the same or similar fields.[1/]

"The Relation Between Achievement and Interest" (1932)[2/]

In 1932 Bernard O. Nemoitan made a study to determine the relationship between expressed interest in a school subject and ability in that subject as judged by school marks.

One-hundred fifty high school seniors in the last half of the twelfth grade were asked to chose the subject that they had taken and liked best, the subject that they had liked second best, the subject that they had liked least and the subject that they had liked next to least. These students were from both sexes and all curriculums and had forty-six school subjects from which to chose. The students were asked to to judge the subjects as if they were already out of school so that they would not center their thought on the present.

The average grade that each student had received,

[1/] John Dunlap. "Preferences as Indicators of Specific Academic Achievement." The Journal of Educational Psychology 26; pp.411-415, November 1936.

[2/] Bernard O. Nemoitan."The Relation Between Achievement and Interest." The Journal of Applied Psychology 16: pp. 59-73, February 1932.

during $3\frac{1}{2}$ years in the subjects listed under the four degrees of interests as well as the total average grades, were computed and the results used to find the relationship between interest and achievement.

The correlation between the average grade for best liked courses and the total average grades for all courses was +.60 +.04; between the average grade for second best liked subjects and the total average for all grades was +.49 +.04; between the average grade for disliked next to most subjects and total average grades was +.57 +.04; and between the average grade for most disliked subject and total average grades was +.58 +.04. The degree of interest and ability was found to become more variable and hence less reliable as the degree of interest considered moved from the extremes. The recency of contact with a course was found to affect the choice of the courses disliked more than that of courses liked.

Nemoitan concluded that the results of this study pointed out the substantial relationship between interest and ability.

"Interests and Abilities" (1944)

Edward L. Thorndike in 1944 reported a study in which he had attempted to measure the permanence of interest and the relationship between reported interest

and marks received in school subjects.

A questionnaire was administered to eighty-one first-year students at Massachusetts Institute of Technology and the Engineering School, University of Cincinnati; fifty-six students at Wentworth Institute, and thirty-five school principals, superintendents and teachers.

On the first sheet of the questionnaire the student groups were asked to rank in order from one to seven their comparative interests in, bargaining, managing people, studying with books, clerical work, mechanical work, farm work and work with animals, when they were between eleven and fourteen years of age. Opposite each interest they were asked to rank their ability A,B,C,D in the subject at that age. They were asked to do the same ranking of interest and rating of ability in a second column that would have applied when they were between fourteen and eighteen years of age. A third section of the first record sheet asked them to do the same ranking of interests and rating of ability in these topics that would apply at the present time.

On the second sheet they were asked to make the same judgments as on page one except that the following seven topics were to be used: (1) mathematics,

(2) history, (3) literature, (4) science, (5) music, (6) drawing, (7) other hand work such as carpentry, sewing, gardening, cooking.

The principals and teachers were asked only to make judgments on sheet one and instead of making judgments on the section dealing with the present time, they were asked to make judgments that would have applied when they were between eighteen and twenty-two years of age.

Table 3. The Correlation Between Interest and Ability of Thirty-five Superintendents, Principals and Teachers as Obtained on Part One of the Thorndike Scale.1/

Age	Correlation Coefficient
11 - 14	+ .83
14 - 18	.83
18 - 22	.88
Adults	.92½

1/Edward L. Thorndike, "Interests and Abilities," *The Journal of Applied Psychology*, 28: p. 53, February 1944.

Table 4. The Correlation Between Interest and Ability of Eighty-Eight First Year Engineering Students as Obtained on Part one of the Thorndike Scale. 2/

Age	Correlation Coefficient
11 - 14	+.83
14 - 18	.88
1st year college	.88

The correlation coefficient for all fifty-six students at Wentworth Institute in the three age groups was +.925. The total correlation coefficient between interest and ability for the seven subject matter areas on sheet two was +.89. The reported permanence of interest and ability was about +.67 for all groups studied.

2/ Ibid., p. 53.

"Subject Preference of Mentally Superior and Inferior High School Students" (1939) 1/

Glenn M. Blair made a study to determine if the subject preference of gifted senior high school boys differed significantly from those of their mentally inferior classmates.

All pupils in attendance during the spring of 1937 at Everett Senior High School, Washington were given the Otis S-A Test of Mental Ability, Higher Examination Form A. Those students whose I.Q.'s were one standard deviation or more above the group average (I.Q.'s of 114 or higher) were labeled "superior." Those students whose I.Q.'s were one standard deviation or more below the group average (I.Q.'s or 94 or below) were labeled "inferior."

Each student filled out a questionnaire which contained among other items the following questions:

1. "Of all the school subjects that you have ever taken, name the one you liked best."
2. "Name the subject that you liked least."

Mathematics was found to be by far the best liked subject of "superior" boys.

Shop was the best liked subject by "inferior" boys.

1/ "The Subject Preference of Mentally Superior and Inferior High School Students," The Journal of Educational Research 33: P. 89-92, February 1939.

English was the best liked subject by "superior" girls.

The "superior" boys liked science better than "inferior" boys. The "inferior" boys listed history and social studies as the preferred subject more often than "superior" boys. "Superior" girls listed mathematics and foreign languages in rather large numbers while the "inferior" girls listed them scarcely at all. Although commercial subjects and shop were not the preferred subjects of "superior" boys there were none in this group that gave them as being disliked. Music and art were seldom disliked by any group.

Blair, 1/ concluded his study by making the following statements:

> The findings of this study show clearly that the preferences of mentally superior and inferior students differ greatly with respect to certain school subjects.
>
> The fact that mentally inferior pupils show very little interest in high-school mathematics but express marked preferences for shop and home economics is probably indicative of their greater success in the latter subjects than in the former.
>
> The existence of marked differences between the subject preferences of bright and dull secondary school students, should indicate both the futility and inadvisability of administering the same curriculum in both these groups.

"The Effect of Teacher Popularity Upon Attitude Toward School Subjects." 2/ (1938)

1/Glenn M. Blair, "The Subject Preferences of Mentally Superior and Inferior High School Students," The Journal of Educational Research 33: pp 89-92, February 1939.

2/Stephan M. Corey and George S.Berry, "The Effect of Teacher Popularity Upon Attitude Toward School Subjects," The Journal of Educational Psychology 29: pp. 665-670, December 1938.

Stephan M. Corey and George S. Berry conducted a survey in which they measured the relationship between teachers that the students reported they liked or disliked and the subjects they liked or disliked.

A questionnaire was given to 472 high school students on which they were asked to name the subjects that they liked most and the subject for which they had the greatest dislike.

Three months later the same students were asked to list on a questionnaire the teacher that they liked most and the teacher for which they had the greatest dislike.

Out of 944 times subjects were named as being liked or disliked 569 reported liking the subjects. Out of 702 teachers mentioned as being liked or disliked 490 were reported to be extremely well liked. About three teachers were reported to be liked for every one being disliked. There was a strong tendency to report liking of both teacher and subject if either were particularly popular. There were only eighty-two cases where both teachers and the subject she was teaching were disliked. Twice as many popular teachers were teaching unpopular subjects as the reverse.

The writers concluded that the majority of teachers

and subjects were well liked and that the popular teacher's personality was intimately fused with that of the subject she was teaching.

"The Relation of Marks in College Courses to the Degree of Interest, Value and Difficulty of the Courses." (1945) 1/

A. Q. Sartain conducted a survey at Southern Methodist University in 1945 to determine the extent to which the judgment that a student makes concerning the degree of interest of a college course is related to his judgments concerning its value and its difficulty and also the extent to which these are related to the mark that he receives at the end of the course.

Three separate scales were constructed, one each for interest, value and difficulty. Each statement of the twenty-one item scales was carefully chosen by judges and scaled by using Thurstone's method of "equal appearing intervals." The students marked each statement in such a way as to signify that they agreed, disagreed or were undecided about it.

The three scales were given to 159 students in four different college courses to check the validity and reliability. Using the split-half method of

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1/"The Relation of Marks in College Courses to the Degree of Interest, Value and Difficulty of the Courses." The Journal of Educational Psychology 36: p. 561-566, September 1945. A. Q. Sartain

computing reliability the tester found a reliability coeffieient of .795.

The three scales were then administered to 118 students in freshman and sophomore psychology courses to discover the relationship between interest, value and difficulty, and the marks that they received in these courses.

Marks were found to be negatively correlated with difficulty but not strongly. Marks were fairly highly correlated with interest and value. Interest and value were found to be closely related.

"Interests of Public Secondary School Boys" (1937)[1/]

J.W.M. Rothney reported in 1937 the results of a study in which he had attempted to measure the interests of public secondary school boys.

Three-hundred and six boys were chosen to compose of a test building group. These boys were asked to make a list of activities that they had carried on during the week just because they liked the activities. These boys were from several different schools and the request was made to the groups at different times so that their activities covered a five month span.

The boys listed nine hundred different activities,

[1/] J.W.M. Rothney. "The Interests of Public Secondary School Boys." The Journal of Educational Psychology 28: p. 561-594, November 1937.

persons or things in which they had interested themselves. These nine hundred activities were grouped to make an inventory of three hundred twenty-one items. The inventory was administered to four hundred forty-five boys in the Massachusetts secondary schools. Most of the boys were college preparatory students in the tenth grade. The students marked each statement on the inventory by placing a check mark in a column headed: "Like, Indifferent, Dislike or Unknown."

The table below gives the results obtained on statements dealing with twenty-four commonly offered secondary school subjects.

TABLE 5. NUMBERS OF SUBJECTS IN A GROUP OF 306 RESPONDING TO SUBJECTS LISTED. SUBJECTS WERE BOYS IN EIGHT PUBLIC HIGH SCHOOLS OF MASSACHUSETTS. 1/

Subject	Like	Indifferent	Dislike	Unknown
Algebra	194	59	52	0
History	194	83	24	5
Arithmetic	192	70	43	1
Geography	172	96	35	3
English	167	97	41	1
Geometry	166	65	83	2
Gen.Science	158	47	22	17
French	155	67	63	21
Chemistry	146	25	31	104
Spelling	143	107	55	1
Latin	106	97	98	5

1/ J.W.M. Rothney. "The Interests of Public Secondary School Boys." The Journal of Educational Psychology 28: P. 561-594, November 1937.

Table 5. (concluded)

Shop-Work	106	63	49	88
German	39	17	20	230
Hebrew	31	18	11	246
Physics	29	19	16	242
Spanish	0	0	0	306

No school subjects were liked by more than seventy percent of any group. Church and creative activities all come below the fifty percent liked group. Trips and visits, athletics, and movies stood high on the liked list as does reading. Anto-social activities were least liked.

Rothney concluded that, "Inventory of students interests for the purpose of predicting their scholastic success is not a profitable procedure." 1/

He found that there was a higher correlation between average interest scores and geometry achievement scores than there was between average interest scores and average achievement scores. Much the same relationships were found between the other subjects and achievements in those subjects.

1/ J.W.M. Rothney, "The Interests of Public Secondary School Boys" *The Journal of Educational Psychology* 28: P. 594, November 1937.

CHAPTER III

DEVELOPMENT OF THE SCALE FOR MEASURING ATTITUDE TOWARDS SCHOOL SUBJECTS

Attitude Measurement

Definition of an attitude.-- Gordon W. Allport[1] defines an attitude as:

> .... a mental or neural state of readiness, organized through experiences, exerting a driving or dynamic influence upon the individual's response to all objects and situations with which it is related.

Attitudes are important.-- Kingsley[1] writes:

> Learning is the development within the individual of controls and determiners of behavior. As these controls are changed, the individual's behavior takes on new forms. Thus, the modification and control of behavior is the outcome of learning. Among the various tendencies and predispositions which are acquired and modified by learning none is more important to the individuals and social welfare than attitudes and ideals. These determiners of activities are important because of the broad scope of their potent influence. They extend beyond the range of habit, and they govern the use of knowledge. Their development is more difficult to appraise than is the development of skills and knowledge, but it is equally essential for the full and wholesome education of the individuals.

1/ Gordon W. Allport, Attitude, A Handbook of Social Psychology, Carl Murchison, Editor: Clark University Press, Worcester, Massachusetts 1935, Page 810.

2/ Howard L. Kinsley, The Nature and Conditions of Learning. Prentice-Hall, Inc., New York, 1946. Page 425

Fundamental Attitudes.-- Bently[1] describes three fundamental attitudes which persons assume toward objects and other people as the attitude of "knowledge," "appreciation" and "use." He states that one or more of these attitudes may be present at any time. It can be readily seen that these attitudes exert a directing influence on the manner in which a person responds in a variety of situations. If a student has an attitude of antagonism toward his teachers or he can see no use in the material he is studying he is unlikely to do his best work. Sheldon and Eleanor Glueck[2] found in their study that unwholesome attitudes were largely responsible for the misdeeds of delinquent youths and criminals.

Measurement of Attitudes.-- Most psychologists state that if a thing or feeling exists that it can be measured. It is also agreed that some characteristics are more difficult to measure than others. Floyd Allport[3] writes:

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[1] Madison Bently, The Field of Psychology, D.Appleton-Century Company, Inc. 1935. Page 13-16.

[2] Sheldon and Eleanor T. Glueck, One Thousand Juvenile Delinquents, Harvard University Press, Cambridge, Massachusetts, 1934, Page 131.

[3] Daniel Katz and Floyd Allport, Students Attitudes, The Craftsman Press, Inc., Syracuse, 1931, P. 353.

> It is only common attitudes that can be measured, for measurement requires a scale, and there is no scale which does not depend upon central tendencies, and dispersions of opinions expressed by many people.........Common attitude may be defined as those attitudes which are essentially uniform, owing to the operation of similarly constituted human beings,

The majority of investigations have used the questionnaires to measure attitudes. The principal disadvantage in using a questionnaire is that it expresses an opinion and does not necessarily predict behavior. In the main, however, most people conduct themselves in accordance with their beliefs and opinions. If the person filling out a questionnaire is honest in the statement of his opinion we can predict with some reliability his behavior.

Social Attitude.-- Many studies have been made to discover the attitudes of adults and students. Most of the studies such as Berkman's,[1] Katz,[1] and Brady's,[2] Thurstone's[3] and Allport and Vernon's[4] have dealt with the social attitudes of adults and students.

1/ Sidney Albett Berkman, A Study of Race Attitudes of Negro Children of Adolescent Age, The Journal of Abnormal and Social Psychology "29," May 1934, Pages 18-29

2/ Daniel Katz and Kenneth W. Brady, Racial Prejudice and Racial Steriotypes, The Journal of Abnormal and Social Psychology 30, February 1935, Pages 175-193.

3/ L.L.Thurstone and E.J. Chive, The Measurement of Attitude: A Psychophysical Method, The University of Chicago Press 1929, Page 517

4/ Gordon W. Allport, Attitude, A Handbook of Social Psychology, Carl Murchison, Editor: The Clark University Press, Worcester, Massachusetts, 1935. Page 810.

There can be little doubt but what the school has an important part to play in the development of desirable social attitudes on the part of their students but before the school can hope to develop desirable social attitudes it must first insure the development of favorable attitudes toward the school and school teachers.

Development of a Scale to Measure Attitudes Towards School Subjects

The Problem

The primary concern of this writer was to develop an attitude scale that would measure with a satisfactory degree of reliability and validity the attitudes of a representative group of high school students toward secondary school subjects. It was important that the scale developed should be able to provide data concerning the following questions. (1) Do the students with the most favorable attitudes toward school subjects score the highest marks in these subjects. (2) Do the students that find the subjects the most difficult receive the lowest marks in these subjects? (3) Is there a significant relationship between marks received and value seen in a subject, or vice versa? (4) Are there subjects that girls have a more favorable attitude towards than boys? (5) Are there subjects that boys have a more favorable attitude towards than girls? (6) What subjects are judged the most valuable, the most interesting, the most difficult. (7) Is pupil-subject attitude reasonably constant from school to school? (8) Of what significance

is pupil-subject attitude to school administrators and classroom teachers? (9) What effect does curriculum choice have upon pupil-subject attitude?

The Acquiring of Attitude.-- It was important to discover how attitudes are acquired before attempting to measure the presence and direction of the attitudes. Kingsley describes the following four ways in which attitudes may be developed. (1) Imitation[1], the tendency to do and feel as other adolescents in a group do. (2) Emotional experiences[2] - likes, dislikes, interest and aversions created by some personal cont~~r~~act with the person or object under consideration. (3) Informative experiences[3] - attitudes developed by what we experience, see, read or hear. (4) Deliberate cultivation[4] - a purposeful determination to develop a specific attitude.

Acquiring Attitude Toward School Subjects.-- The development of attitude toward school subjects are probably almost wholly governed by an interaction of the first three factors. If the student feels that the

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[1] Howard L. Kingsley, The Nature and Conditions of Learning. Prentice-Hall Inc. New York, 1946, page 435.

[2] Ibid., Page 435

[3] Ibid., Page 437

[4] Ibid., Page 437.

subject meets some of his present or future needs he is more apt to develop a more favorable attitude toward the subject than the student who feels that the subject is a waste of time. If the subject is clearly, interestingly, and well presented and if there is sufficient opportunity for individual or group activity the student is likely to develop favorable attitudes toward that subject. If the student finds the subject so difficult that he can not hope to succeed he is almost certain to develop an unfavorable attitude toward that subject. There can be little question but what there are other factors affecting student-subject attitudes such as the personality of the teacher, home conditions, and classroom conditions. Although these last three factors are important in attitude development, no attempt was made in this study to measure their effect upon the total subject-attitude of the students.

Three Divisions of Student Subject Attitude.-- For the purpose of this study student-subject attitude was divided into three parts. Each of which contribute to the total student-subject attitude. A separate scale was developed for subject value, interest and difficulty. The first forms of these scales consisted of twenty-one statements each for value, interest and difficulty. A

A group of fifteen graduate students in education discussed these statements to determine their scale values and their appropriateness for securing a valid response. It was the opinion of this group and their director, Dr. Roy O. Billett, that a scale of twenty-one divisions was too fine an an instrument for high school students to handle easily. The group felt that although Remmers, Saratain, Thurstone and others had used scales containing twenty or more divisions, that for the purpose of measuring the attitude of students toward their school subjects, a scale of five or seven divisions would be more satisfactory.

Development of a Seven Point Scale.-- Symonds[1/] felt that a scale of seven classes is the most satisfactory for rating human traits. He said:

> With less than seven classes the coursness of the rating led to an appreciable loss in reliability greater than the arbitrary standard of allowable loss. More than seven classes yielded such a small increment in reliability above what would be obtained with seven classes that the attempt to make the finer discrimination turned out not to be worthwhile.

Three seven point scales one each for value, interest and difficulty, were developed by taking the seven most significant statements from each of the discarded twenty-one point scales. The statements were so chosen

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[1/] Percival M. Symonds, Diagnosing Personality and Conduct, The Century Company, New York, 1931, page 79

that they would approximate seven equal intervals on a scale. Care was taken to word each statement in such a manner that it would be understandable and have meaning to the majority of high school students. Although many writers, among them Symonds, feel that the words average, fairly, every and exceedingly should be avoided in favor of more descriptive adjectives, the term average was used as the mid-point on the seven point scales. It was felt that the term average had more meaning and significance to high school students than other terms of central tendency.

The terms most and least were used to describe the condition that would place a subject as the extremes of the Value, Interest and Difficulty Scales. Other significant terms were used to signify a position at other points on the scales.

Terms Defined.-- The terms value, interest and difficulty were defined so that all statements would have similar meanings for all students. Value was defined: " A subject or course is valuable to the extent that it is useful, to the extent that it affords you pleasure, to the extent that it aids you to better understanding the environment and society in which you live, or to the extent that it will aid you in earning a

living."

Interest was defined: "A subject is interesting to the extent that it holds your attention, to the extent that it creates a desire for further study and to the extent that you enjoy working with it."

Difficulty was defined: "A subject is difficult to the degree that it requires more effort, concentration and time than do most subjects."

Scoring for Interest, Value and Difficulty.--Each student receives an interest score, value score and difficulty score. The scores correspond to the scale rating of the statements checked. If a student made a check mark opposite four on all three scales it would signify that he felt the subject under question was of average value, interest and difficulty.

A "Trial Run".-- Fifty copies of the tentative scales were reproduced and administered to a group of high school students to determine if the wording of the statements and directions were clear. The students were asked to make any oral or written suggestions that would make the scales more understandable. Several minor changes were made in the wording of the directions as a result of this "trial run."

Directions for Administering.-- Directions for the teacher are included in the appendix with a copy of

"A Scale For Measuring the Attitude of Students Toward School Subjects."

The Cooperating Schools and Their Sample

Securing the Cooperating School.-- Letters, of which there is a copy in the appendix, were sent to a selected group of secondary-school principals. Accompanying the letter was a copy of "the Scale" and a postal card upon which the principals were asked to signify their willingness or unwillingness to cooperate in the study. A personal visit was made to each principal signifying his willingness to cooperate in the study. At this visit the writer explained the importance of obtaining a representative sampling of the students within the school and answered any questions raised by the principal.

The Group Sampled.-- Copies of "The Scale" were administered to students in three Massachusetts public high schools. In all schools the teachers were asked to administer the scale to a section taking each of twenty-four commonly offered secondary-school subjects. One of the schools did not offer all twenty-four of the subjects so they were unable to supply the complete data requested. All sections were not of the same size hence the sample for some subjects is much more limited

than others. Schools in which the students are grouped homogenously either by curriculum or by some other means, were asked to secure as a representative sampling as possible. This was done by suggesting that a college preparatory section taking English I be given "the Scale" and a general course taking English II be given "the Scale." Similar suggestions were made for other subjects.

The attitudes of individual students toward their different school subjects were not gathered in this study for the desire was to obtain a representative sampling of the attitudes of a group of high school students toward their secondary school subjects.

Chapter IV

THE RESULTS OBTAINED BY ADMINISTERING "A SCALE TO MEASURE THE ATTITUDE OF STUDENTS TOWARD THEIR SCHOOL SUBJECTS" IN THREE MASSACHUSETTS HIGH SCHOOLS

Results for School "A"

Description of school "A".-- School "A" is a high school of 281 students located in a town of 4,375 people. The town is characterized as a residential suburban community of the most desirable type. The homes and the school by their appearance suggest wealth and financial security. The town is located within easy commuting distance of Boston and many of the parents commute daily to their businesses and jobs. A high percentage of the students elect the college or business preparatory curriculums and go to advance schools and colleges.

Administering the scale.-- The teachers of School "A" were asked to administer the "Scale" to a section in each of twenty-four subjects offered by the school. They were asked to administer the "Scale" to as representative groups as possible within the subjects they were teaching.

Groups sampled.-- The students of School "A" responded to 393 scales. Of the 393 scales filled out, 194 were completed by boys and 174 by girls. Twenty-five did not signify their sex. Two-hundred eighty-three of the scales were

completed by students taking the college preparatory curriculum. The students taking the general curriculum filled out seventy-nine scales, while the students taking the business curriculum completed twenty-five scales. Two of the students did not signify the curriculum they were following.

Mean scale ratings for value, interest and difficulty.--Table 6 shows the mean value scores obtained for twenty-four subjects sampled in School "A". A glance at the table shows that the students judged Shopwork, Latin III, Shorthand II, English I and Business Mathematics to be of the greatest interest, while U.S. History, Geometry and Spanish I were judged to be the lowest in value. It seems significant that five of the six subjects ranking highest in value were being taken by small selected groups. Three of these five subjects; Shopwork II, Shorthand II, and Education for Family Life are closely related to the lives of the students as wage earners and home-keepers.

Table 7 gives the mean interest scores obtained for the subjects of School "A". The students judged Latin III, Biology, French II, Shorthand II and Shopwork II to be of the greatest interest, while U.S. History, French I, Geometry and Spanish I were judged to be the least interesting. It is significant to point out that although three of the four English courses were ranked in the first eight subjects for value, only one of the English courses ranked in the first

Table 6. MEAN VALUE SCORES OBTAINED FOR SUBJECTS SAMPLED IN SCHOOL "A"

Subject (1)	Number of students (2)	Mean value scores (3)
Shopwork II..........	4	1.25
Latin III............	8	1.38
Shorthand II.........	5	1.40
English I............	26	1.62
Business Mathematics.	7	1.71
Education for Family Life................	7	2.14
English II...........	17	2.18
English III..........	27	2.19
Chemistry............	18	2.27
Typing II............	7	2.29
Algebra I............	21	2.38
French II............	15	2.53
Problems of Democracy	13	2.54
Latin II.............	18	2.56
English IV...........	16	2.62
Biology..............	19	2.71
Physics..............	8	2.78
Latin I..............	18	2.83
Algebra II...........	24	2.83
General Science......	24	2.91
French I.............	25	2.96
U. S. History........	24	3.13
Geometry.............	20	3.40
Spanish I............	22	3.68

thirteen for interest. U.S. History, French I, Geometry, and Spanish I ranked the lowest in both value and interest.

Table 8 shows the mean difficulty ratings obtained for the subjects sampled at School "A". Typing II, Education for Family Life, French II, Business Mathematics and English IV were judged the least difficult, while Algebra II, Latin II,

Table 7. MEAN INTEREST SCORES OBTAINED FOR SUBJECTS SAMPLED IN SCHOOL "A"

Subject (1)	Number of students (2)	Mean interest (3)
Latin III............	8	2.13
Biology..............	19	2.19
French II............	15	2.33
Shorthand II.........	5	2.40
Shopwork II..........	4	2.50
Chemistry............	18	2.72
English I............	26	2.77
Typing II............	7	2.85
Algebra I............	21	2.86
Education for Family Life...............	7	2.86
Business Mathematics.	7	2.86
Algebra II...........	24	2.96
General Science......	24	2.96
English III..........	27	3.00
Problems of Democracy	13	3.23
Physics..............	8	3.25
Latin II.............	8	3.28
English IV...........	16	3.38
Latin I..............	18	3.39
English II...........	17	3.41
U. S. History........	24	3.54
French I.............	25	3.56
Geometry.............	20	3.80
Spanish I............	22	4.04

Geometry, Latin III and Latin I were judged the most difficult.

A comparison of the subjects judged most valuable, interesting and difficult by the boys and girls of School "A".-- Table 9 shows the subjects which the girls judged more valuable than did the boys. Table 10 shows the subjects that

Table 8. MEAN DIFFICULTY SCORES OBTAINED FOR TWENTY-FOUR SUBJECTS OFFERED BY SCHOOL "A"

Subject (1)	Number of students (2)	Mean interest (3)
Typing II............	7	5.29
Education for Family Life................	7	5.28
French II............	15	4.73
Business Mathematics.	7	4.57
English IV...........	16	4.38
Biology..............	19	4.29
General Science......	24	4.25
Spanish I............	22	4.09
English III..........	27	4.07
Problems of Democracy	13	4.00
Shopwork II..........	4	4.00
English II...........	17	4.00
English I............	26	3.88
U.S. History.........	24	3.54
French I.............	25	3.52
Physics..............	8	3.37
Chemistry............	18	3.22
Algebra I............	21	3.14
Shorthand II.........	5	2.80
Algebra II...........	24	2.69
Latin II.............	8	2.68
Geometry.............	20	2.55
Latin III............	8	2.25
Latin I..............	18	2.06

the boys judged more valuable than did the girls. The girls judged Latin I, French I, French II, and Problems of Democracy to be significantly more valuable than did the boys. Other differences between the mean value of the boys and girls were small and probably not too significant, however,

Table 9. SUBJECTS WHICH THE GIRLS OF SCHOOL "A" JUDGED MORE VALUABLE THAN DID THE BOYS

Subject (1)	No. Boys (2)	No. Girls (3)	Mean Value Boys (4)	Mean Value Girls (5)	Mean difference (6)
Latin I....	11	7	3.45	1.86	1.59
French I...	13	8	3.46	2.13	1.33
French II..	6	6	3.33	2.00	1.33
Problems of Democracy.	6	6	3.33	2.00	1.33
Chemistry..	10	6	2.90	2.00	.90
English I..	11	15	2.00	1.33	.67
Latin III..	4	4	1.75	1.00	.75
English II.	6	8	2.50	2.00	.50
Spanish I..	7	10	3.86	3.50	.36
English III	15	11	2.27	2.09	.16

Table 10. SUBJECTS WHICH THE BOYS OF SCHOOL "A" JUDGED MORE VALUABLE THAN DID THE GIRLS

Subject (1)	No. Boys (2)	No. Girls (3)	Mean Value Boys (4)	Mean Value Girls (5)	Mean difference (6)
Biology....	7	12	2.14	3.08	.94
Algebra I..	11	10	2.00	2.80	.80
General.... Science...	14	14	3.07	3.60	.53
English IV.	8	8	2.50	3.00	.50
U.S. History	13	11	2.85	3.45	.60
Latin II...	9	9	2.33	2.67	.34
Geometry...	13	6	3.15	3.33	.18

there seems to be an indication that the girls tend to judge the languages more valuable than do the boys and the boys tend to judge mathematics and science more valuable than do the girls.

Table 11 shows the subjects that the girls judged more

Table 11. SUBJECTS WHICH THE GIRLS OF SCHOOL "A" JUDGED MORE INTERESTING THAN DID THE BOYS

Subject (1)	No. Boys (2)	No. Girls (3)	Mean interest - Boys (4)	Mean interest - Girls (5)	Mean difference (6)
French I...	13	8	4.38	2.00	2.38
French II..	6	6	3.33	1.00	2.33
Latin I....	11	7	4.09	2.28	1.81
Problems of Democracy.	6	6	3.50	2.33	1.17
Chemistry..	10	6	2.40	1.50	.90
English III	15	11	3.40	2.55	.85
English I..	11	15	3.18	2.47	.71
Algebra II.	14	9	3.21	2.55	.67
English II.	15	16	3.83	3.83	.45
Geometry...	13	6	3.69	3.33	.36
Algebra I..	11	10	2.91	2.80	.11

interesting than did the boys. Table 12 shows the subjects which the boys judged more interesting than did the girls. The girls judged French I, French II, Latin I, and Problems of Democracy to be significantly more interesting than did the boys, while the boys judged U. S. History and General Science to be much more interesting than did the girls.

Table 12. SUBJECTS WHICH THE BOYS OF SCHOOL "A" JUDGED MORE INTERESTING THAN DID THE GIRLS

Subject (1)	No. Boys (2)	No. Girls (3)	Mean interest - Boys (4)	Mean interest - Girls (5)	Mean difference (6)
U.S. History	13	11	2.85	4.36	1.51
General Science...	14	5	2.78	3.80	1.02
Spanish I..	7	10	4.43	5.00	.57
Biology....	7	12	1.71	2.17	.46
Latin III..	4	4	2.00	2.25	.25
Latin II...	9	9	3.22	3.33	.11

Table 13 shows the subjects which the girls judged less difficult than did the boys, while table 14 shows the subjects which the boys judged less difficult than did the girls. In judging difficulty as in judging value and interest, there seems to be a tendency for the boys to find the sciences and mathematics less difficult, while the girls tend to find the languages less difficult than did the boys. The girls found Latin I, English IV, French I and Latin II significantly less difficult than did the boys. The boys judged General Science, Chemistry, U. S. History, and Spanish I to be much less difficult than did the girls.

Table 13. SUBJECTS WHICH THE GIRLS OF SCHOOL "A" JUDGED TO BE LESS DIFFICULT THAN DID THE BOYS

			Mean difficulty		Mean
Subject	No. Boys	No. Girls	Boys	Girls	difference
(1)	(2)	(3)	(4)	(5)	(6)
Latin I.....	11	7	1.36	3.14	1.78
English IV..	8	8	3.75	5.00	1.25
French I....	13	8	3.38	4.47	1.09
Latin II....	9	9	2.22	3.11	.89
French II...	6	6	3.33	4.00	.67
English III.	15	11	3.93	4.18	.25
Latin III...	4	4	2.00	2.50	.50
Geometry....	13	6	2.61	2.67	.06

Table 15 shows the total mean scores of 194 boys and 174 girls when all subject scores are combined. There seems to be a tendency for the girls of School "A" to have a slightly more favorable attitude toward their school subjects than do the boys. The total scores indicate that the girls

Table 14. SUBJECTS WHICH THE BOYS OF SCHOOL "A" JUDGED TO BE LESS DIFFICULT THAN DID THE GIRLS

Subject	No. Boys	No. Girls	Mean difficulty		Mean difference
			Boys	Girls	
(1)	(2)	(3)	(4)	(5)	(6)
General Science....	14	5	5.14	2.80	2.34
Chemistry...	10	6	4.80	2.50	2.30
U.S. History	13	11	4.77	3.00	1.77
Spanish I...	7	10	5.28	4.00	1.28
Algebra I...	11	10	3.36	2.90	.46
Algebra II..	14	9	2.85	2.40	.45
Biology.....	7	12	4.27	4.00	.27

Table 15. TOTAL MEAN SCORES OF 194 BOYS AND 174 GIRLS

Attitude (1)	Mean of girls scores (2)	Mean of boys scores (3)
Mean Value......	2.59	2.87
Mean Difficulty.	3.05	3.30
Mean Interest...	3.92	3.63

judge the subjects they are taking to be slightly more valuable, interesting and less difficult than do the boys the subjects they are taking.

Table 16 offers a comparison of the total mean scores obtained by all of the students following either College, General or Business curriculums. The students following the Business Curriculum judged their subjects to be the most valuable, the students following the General Curriculum judged their subjects to be the least interesting and the students following the College Curriculum judged their subjects to be

Table 16. A COMPARISON OF THE TOTAL MEAN SCORES OBTAINED BY THE STUDENTS FOLLOWING THE GENERAL, COLLEGE AND BUSINESS CURRICULA

Curriculum (1)	No. Students (2)	Mean Value (3)	Mean Interest (4)	Mean Difficulty (5)
General	79	2.80	2.65	3.12
College	283	2.48	2.99	3.62
Business	24	2.25	2.63	2.59

the least difficult. The differences between the three curriculums, however, were not great except that the students taking the Business Curriculum judged their subjects much more difficult than did the students following the College curriculum.

Results for School "B"

Description of School "B".-- School "B" is a high school of 435 students located in a town having a population of 8,286. The town is a suburban residential and farming community of the wealthier type. Students from three nearby communities are transported to this high school for their secondary school instruction. These three communities are farming and manufacturing towns.

The schools have better than average financial support. The students are well housed in a modern, well equipped building and there are two other adequately equipped buildings which are used for manual arts and for physical education activities. An excellent, large recreational field is located near the school and is used for physical education activities during fair weather. School "B" has an excellent plant, an adequate staff of twenty-one teacher and should be able to offer a program of studies that meets the educational needs and interests of its students.

Groups sampled.-- School "B" administered "the scale" to sections taking twenty-four secondary-school subjects. The students responded to 509 scales. Of the 509 scales filled out, 333 were completed by girls and 172 by boys. Five did not signify their sex. Three-hundred sixteen scales were completed by students following the college preparatory curriculum, one-hundred thirty-one by students taking the general curriculum and by fifty-four students following the

business curriculum. Eight students did not signify which curriculum they were following.

Table 17. MEAN VALUE SCORES OBTAINED FOR SUBJECTS SAMPLED IN SCHOOL "B"

Subject (1)	Number of students (2)	Mean value scores (3)
English I.......	16	1.75
Chemistry.......	26	1.81
English II......	32	1.84
Algebra II......	19	1.91
Shopwork.........	15	2.00
U.S. History....	25	2.08
Biology.........	21	2.09
Latin II........	39	2.10
Latin I.........	31	2.10
English III.....	20	2.10
Spanish I.......	12	2.17
Typing II.......	18	2.18
Problems of Democracy......	16	2.20
Algebra I.......	15	2.27
English IV......	20	2.35
Physics.........	20	2.60
Home Economics..	21	2.81
Shorthand II....	17	2.81
Bookkeeping.....	22	2.90
General Science.	24	2.96
French II.......	18	3.39
Geometry........	24	3.39
Business Mathematics.........	19	3.47
French III......	12	3.59

Mean scale ratings for value, interest and difficulty.--Table 17 lists the subjects in the order that the students judged them in value. English I, Chemistry, English II, and Algebra II were judged to be the most valuable while French II,

Geometry I, Business Mathematics and French III were judged to be the least valuable.

Table 18 lists the subjects in the order that the students of School "B" judged them to be of interest. Biology, Spanish, Shopwork, Chemistry and U. S. History were judged to be the most interesting while French II, English IV, Shorthand II, French III, and Business Mathematics were judged to be the least interesting. It should be noticed that some subjects such as General Science, Biology, and Spanish occupied much higher positions on the interest table than they had on the value table. It should also be noticed that the subjects, with the exception of General Science, that occupied the lower positions on the value table also occupied the lower positions on the interest table.

Table 19 lists the mean difficulty rating of the subjects sampled in School "B", in the order of least difficult. Typing II, Biology, Problems of Democracy and Home Economics were judged the least difficult while Algebra I, Latin I, and Geometry were judged the most difficult. There seems to be no significant relationship between either interest and difficulty or value and difficulty. Biology was judged highest in both interest and least difficulty, yet Spanish which was judged second in interest occupied the fourteenth position on the difficulty table.

A comparison of the subjects judged most valuable,

Table 18. MEAN INTEREST SCORES OBTAINED FOR TWENTY FOUR SUBJECTS OFFERED BY SCHOOL "B"

Subject (1)	Number of students (2)	Mean interest (3)
Biology........	16	1.24
Spanish........	12	1.90
Shopwork.......	15	2.13
Chemistry......	26	2.20
U.S. History...	25	2.24
General Science	24	2.33
Home Economics.	21	2.52
Latin I........	31	2.52
Typing II......	17	2.53
Physics........	20	2.55
English II.....	32	2.66
Algebra II.....	19	2.74
Problems of Democracy.....	16	2.90
Latin II.......	39	2.97
Algebra I......	15	3.00
Geometry I.....	24	3.04
English I......	16	3.13
Bookkeeping I..	22	3.23
English III....	20	3.25
French II......	18	3.55
English IV.....	20	3.60
Shorthand II...	16	3.62
French III.....	12	3.66
Business Mathematics........	19	3.89

interesting and difficult by the boys and girls of School "B".-- Table 20 compares the judgments of boys and girls concerning the value of subjects which they both were taking. The girls judged Latin I, U. S. History, and Business

Table 19. MEAN DIFFICULTY SCORES OBTAINED FOR TWENTY-FOUR SUBJECTS OFFERED BY SCHOOL "B"

Subject (1)	Number of students (2)	Mean difficulty (3)
Typing II............	16	4.70
Biology..............	21	4.57
Problems of Democracy	16	4.50
Home Economics.......	21	4.48
General Science......	24	4.12
English IV...........	20	4.10
English I............	16	4.06
Business Mathematics.	19	3.84
English II...........	32	3.56
Physics..............	20	3.55
Shorthand II.........	16	3.50
French III...........	12	3.33
Bookkeeping I........	22	3.32
U. S. History........	25	3.28
Spanish..............	12	3.25
English III..........	20	3.15
Shopwork.............	15	2.87
Algebra II...........	19	2.84
Chemistry............	26	2.73
French II............	18	2.67
Latin II.............	39	2.64
Geometry I...........	24	2.59
Latin I..............	31	2.50
Algebra I............	15	2.27

Mathematics to be significantly more valuable than did the boys.

Table 21 shows the subjects that the boys judged more valuable than did the girls. The boys judged Physics, Geometry, and Algebra I to be much more valuable than did the girls. Other differences do not seem significant yet

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Table 20. SUBJECTS WHICH THE GIRLS OF SCHOOL "B" JUDGED MORE VALUABLE THAN DID THE BOYS

Subjects (1)	No. of Boys (2)	No. of Girls (3)	Mean value Boys (4)	Mean value Girls (5)	Mean difference (6)
Latin I.........	16	26	3.50	2.56	1.11
U. S. History...	9	16	2.78	1.69	1.09
Business Mathematics....	6	13	3.50	2.69	.81
General Science.	15	9	3.20	2.56	.64
English II......	14	18	2.15	1.61	.54
English I.......	8	8	2.00	1.50	.50
Problems of Democracy......	4	12	2.50	2.08	.44
Chemistry.......	7	19	2.00	1.74	.26
English III.....	4	16	2.25	2.06	.19
Bookkeeping I...	5	17	3.00	2.82	.18
Algebra I.......	15	4	1.93	1.75	.18
Latin I.........	10	18	2.20	2.11	.09

Table 21. SUBJECTS WHICH THE BOYS OF SCHOOL "B" JUDGED MORE VALUABLE THAN DID THE GIRLS

Subjects (1)	No. of Boys (2)	No. of Girls (3)	Mean value Boys (4)	Mean value Girls (5)	Mean difference (6)
Physics.........	16	4	2.06	4.75	2.66
Geometry I......	6	18	2.17	3.78	1.61
Algebra I.......	6	9	1.83	2.56	.73
French II.......	7	11	4.14	4.57	.43
Biology.........	9	12	1.89	2.25	.36
Spanish I.......	4	8	1.75	2.00	.25

there seems to be a slight tendency for the girls to judge English and the foreign languages more valuable than do the boys. This tendency is not so pronounced as it was in

School "A".

Tables 22 and 23 offer a comparison of the interest judgments of boys and girls. The girls judged Latin I, and French II to be much more interesting than did the boys, and the boys judged Physics to be much more interesting than did the girls. The differences between the judgments of the boys and girls in most subjects are small which may mean that the boys and girls have about the same attitudes toward their subjects.

Table 22. SUBJECTS WHICH THE GIRLS OF SCHOOL "B" JUDGED MORE INTERESTING THAN DID THE BOYS

Subject	No. of Boys	No. of Girls	Mean value		Mean difference
			Boys	Girls	
(1)	(2)	(3)	(4)	(5)	(6)
Latin I........	10	18	3.40	2.17	1.23
French II.......	7	11	4.14	3.18	.96
U.S. History...	9	16	2.67	2.00	.67
English III....	14	18	3.00	2.39	.61
Problems of Democracy.....	4	12	3.50	3.00	.50
Latin II.......	13	26	3.92	2.50	.42
Algebra I......	6	9	3.17	2.89	.28
Bookkeeping I..	5	17	3.00	2.82	.18

Tables 24 and 25 offer a comparison of the difficulty judgments of boys and girls. The girls judged English III, Spanish and Latin II to be much less difficult than did the boys, while the boys found Business Mathematics, Physics, U.S. History, English II, Biology and Chemistry to be less

Table 23. SUBJECTS WHICH THE BOYS OF SCHOOL "B" JUDGED MORE INTERESTING THAN DID THE GIRLS

Subject	No. of Boys	No. of Girls	Mean value		Mean difference
			Boys	Girls	
(1)	(2)	(3)	(4)	(5)	(6)
Physics.........	16	4	2.25	3.50	1.25
Algebra II......	15	4	2.60	3.25	.65
Geometry........	6	18	2.67	3.22	.55
General Science.	15	9	2.13	2.67	.54
Spanish.........	4	8	1.50	1.87	.37
English I.......	8	8	3.63	3.88	.25
Business Mathematics.........	6	13	3.83	3.92	.08
Biology.........	9	12	1.22	1.25	.03

Table 24. SUBJECTS WHICH THE GIRLS OF SCHOOL "B" JUDGED TO BE LESS DIFFICULT THAN DID THE BOYS

Subject	No. of Boys	No. of Girls	Mean difficulty		Mean difference
			Boys	Girls	
(1)	(2)	(3)	(4)	(5)	(6)
English.........	4	16	2.25	4.00	1.75
Spanish.........	4	8	2.25	3.00	.75
Latin II........	13	26	2.15	2.89	.74
French II.......	7	11	2.27	2.91	.64
English I.......	8	8	3.88	4.25	.37
General Science.	15	9	4.07	4.33	.26
Latin I.........	10	18	2.30	2.56	.26
Bookkeeping I...	5	17	3.00	3.06	.06

difficult than did the girls.

Table 26 shows the total mean scores of 173 boys and 324 girls when all subject scores were combined. The differences between the total scores for the boys and girls of School "B" are too small to be statisticall significant.

A comparison of the value, interest and difficulty

Table 25. SUBJECTS WHICH THE BOYS OF SCHOOL "B" JUDGED TO BE LESS DIFFICULT THAN DID THE GIRLS

Subject (1)	No. of Boys (2)	No. of Girls (3)	Mean difficulty Boys (4)	Mean difficulty Girls (5)	Mean difference (6)
Business Mathematics.........	6	13	5.00	3.31	1.69
Physics.........	16	4	3.88	2.25	1.63
U.S. History....	9	16	4.11	2.81	1.30
English II......	14	18	4.28	3.00	1.28
Biology.........	9	12	5.11	4.16	.95
Chemistry.......	7	19	3.28	2.53	.75
Geometry........	6	18	2.84	2.50	.34
Algebra II......	15	4	2.87	2.75	.13
Algebra I.......	6	9	2.33	2.22	.11

Table 26. TOTAL MEAN SCORES OF 173 BOYS AND 324 GIRLS

Attitude (1)	Mean of girls scores (2)	Mean of boys scores (3)
Mean Value......	2.41	2.37
Mean Difficulty.	2.81	2.78
Mean Interest...	3.42	3.32

judgments of students following the College, Business and General Curriculums.-- Table 27 offers a comparison of the total mean scores obtained by all of the students following either the College, General or Business Curriculums. The students following the College and General Curriculums expressed nearly the same judgments concerning the value, interest and difficulty of the subjects that they were taking.

The students following the Business Curriculum judged their subjects to be slightly less valuable, but significantly less interesting and less difficult.

Table 27. A COMPARISON OF THE TOTAL MEAN SCORES OBTAINED BY THE STUDENTS FOLLOWING THE GENERAL, COLLEGE AND BUSINESS CURRICULUMS

Curriculum (1)	No. Students (2)	Mean Value (3)	Mean Interest (4)	Mean Difficulty (5)
General....	131	2.28	2.81	3.27
College....	316	2.33	2.70	3.27
Business...	54	2.72	3.59	4.24

Results Obtained in School "C"

A Description of School "C".-- School "C" is a high school of 189 students located in a rural community of about 5,000 people. The town is a flower growing and farming center but it also has several manufacturing establishments. A large number of the parents of the students are employed in a nearby state institution. The town is located within commuting distance of a large business and manufacturing center, so a small percentage of the parents are business and professional men employed in that city. The school building is particularly attractive in appearance, having spacious lawns and a fine athletic field.

The Group Sampled.-- Students of School "C" responded to 462 scales. Of the 462 scales filled out, 216 were completed by boys and 237 by girls. Nineteen did not signify their sex. Two-hundred thirty-five of the scales were completed by students following the college preparatory curriculum, one-hundred forty-four by students taking the general curriculum and by eighty-three following the business curriculum.

The students in the sections at School "C" are less homogeneously grouped than the groups sampled at Schools "A" and "B". In most of the subjects termed constants or required, the groups were clearly heterogeneous. There can be little question but that School "C" offered the most representative

sample of its students, of any of the schools cooperating in this study. It is probably true that the smaller the school the less opportunity it has for reducing the heterogeneity of students in a particular section. Dr. Roy O. Billett[1] reports in Monograph #13 of the National Survey of Secondary Education: "The use of homogeneous grouping and its use with estimated unusual success increase as the total enrollment increases."

Mean scale ratings for value, interest and difficulty.--Table 28 lists the subjects in the order that the students judged them in value. Latin I, English III, Physics and Shorthand II were judged the most valuable while Geometry I, Biology, French II and General Science were judged to be the least valuable.

Table 29 lists the subjects in the order that students of School "C" judged them to be of interest. Physics, Home Economics, French I, Spanish and Shorthand II were judged to be the most interesting while English III, English IV, Business Mathematics, Geometry and Algebra II were judged to be the least interesting, It should be noticed that the four English courses occupied the 2nd, 6th, 7th, and 12th positions on the value Table yet they occupied the 14th, 18th, 20th, and 21st. positions on the interest table. Many

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[1] Roy O. Billett, Provisions For Individual Differences Marking and Promotion; National Survey of Secondary Education, Monograph #13, 1935, Page 59.

of the other subjects occupied nearly the same relative positions on both tables.

Table 28. MEAN VALUE SCORES OBTAINED FOR SUBJECTS SAMPLED IN SCHOOL "C"

Subject (1)	Number of students (2)	Mean value scores (3)
Latin I........	13	1.61
English III....	24	1.62
Physics........	13	1.76
Shorthand II...	10	1.80
Home Economics.	20	2.20
English I......	19	2.21
English II.....	23	2.26
Typing II......	10	2.30
French I.......	14	2.36
Algebra II.....	16	2.44
Shopwork.......	13	2.45
English IV.....	26	2.62
Latin II.......	18	2.67
U.S. History...	26	2.85
Algebra I......	26	2.89
Business Mathematics........	22	2.96
Spanish I......	16	3.06
Chemistry......	27	3.22
Bookkeeping I..	16	3.25
Problems of Democracy.....	25	3.28
Geometry I.....	17	3.29
Biology........	25	3.40
French II......	16	3.50
General Science	24	3.67

Table 30 lists the mean difficulty ratings of the students judgments concerning the difficulty of their school subjects. The table lists the subjects in the order that the students judged them from least difficult to most diffi-

Table 29. MEAN INTEREST SCORES OBTAINED FOR TWENTY FOUR SUBJECTS OFFERED BY SCHOOL "C"

Subject (1)	Number of students (2)	Mean interest (3)
Physics........	13	1.53
Home Economics.	20	2.20
French I.......	14	2.36
Spanish I......	16	3.06
Shorthand II...	10	1.80
Latin II.......	13	1.61
Typing II......	10	2.30
Latin I........	18	2.67
French II......	10	3.50
Biology........	25	3.40
Shopwork.......	13	2.45
Chemistry......	27	3.22
Problems of Democracy.....	25	3.28
English I......	19	2.21
Algebra I......	25	2.89
General Science	24	3.67
U.S. History...	26	2.85
English II.....	23	2.26
Bookkeeping I..	16	3.25
English III....	24	1.62
English IV.....	26	2.62
Business Mathematics........	22	2.96
Geometry I.....	17	3.29
Algebra II.....	16	2.44

cult to most difficult. Typing II, Home Economics, Problems of Democracy, and Algebra I were judged to be the least difficult while Algebra II, Bookkeeping I, Geometry I and Shorthand II were judged to be the most difficult. The reader's attention should be called to the wide difference between the difficulty judgment of the sections taking

Table 30. MEAN DIFFICULTY SCORES OBTAINED FOR TWENTY FOUR SUBJECTS OFFERED BY SCHOOL "C"

Subject (1)	Number of students (2)	Mean difficulty (3)
Typing II......	10	5.40
Home Economics.	20	5.35
Problems of Democracy.....	25	4.84
Algebra I......	25	4.70
Spanish I......	16	4.56
Biology.........	25	4.52
Shopwork.......	13	4.45
French I.......	14	4.29
English II.....	23	4.26
Latin II.......	14	3.92
French II......	10	3.90
General Science	24	3.87
Business Mathematics........	22	3.86
English III....	24	3.75
English IV.....	26	3.65
English I......	19	3.52
Latin I........	18	3.50
Chemistry......	17	3.45
Physics........	13	3.23
U.S. History...	26	3.23
Shorthand II...	10	3.20
Geometry I.....	17	3.19
Bookkeeping....	16	3.06
Algebra II.....	16	2.44

Algebra I and Algebra II. Algebra II was judged the most difficult subject whereas Algebra I was judged the fourth easiest subject. Geometry occupied about the same relative position on all three of the tables. It occupied the 21st. position on the Value Table, the 23rd. position on the Interest Table and the 22nd. position on the Difficulty Table.

A comparison of the subjects judged most valuable, interesting and difficult by the boys and girls of School "C".-- Tables 31 and 32 offer a comparison of the value judgments of boys and girls. The girls judged English III, Problems of Democracy and Latin II to be much more valuable than did the boys, while the boys judged Geometry I, Algebra III and General Science to be significantly more valuable than did the girls.

Table 31. SUBJECTS WHICH THE GIRLS OF SCHOOL "C" JUDGED MORE VALUABLE THAN DID THE BOYS

Subject (1)	No. of Boys (2)	No. of Girls (3)	Mean Value Boys (4)	Mean Value Girls (5)	Mean difference (6)
English III....	13	11	2.15	1.00	1.15
Problems of Democracy.....	13	12	3.69	2.83	.86
Latin II.......	4	9	2.25	1.56	.69
English I......	11	8	2.45	1.88	.57
English IV.....	17	9	2.71	2.33	.38
Biology........	12	11	3.83	3.55	.28
Business Mathematics........	15	7	3.00	2.86	.14

Tables 33 and 34 offer a comparison of the interest judgments of boys and girls of School "C". The girls judged English I, English IV, English III and English II to be much more interesting than did the boys, while the boys judged Geometry I, General Science, Algebra II and U. S. History to be much more interesting than did the girls. In

Table 32. SUBJECTS WHICH THE BOYS OF SCHOOL "C" JUDGED MORE VALUABLE THAN DID THE GIRLS

Subject (1)	No. of Boys (2)	No. of Girls (3)	Mean value Boys (4)	Mean value Girls (5)	Mean difference (6)
Geometry I......	9	8	2.33	4.37	2.04
Algebra II.....	9	7	3.44	4.43	.99
General Science	8	16	3.13	3.94	.71
Latin I........	8	10	2.38	3.00	.62
Algebra I......	17	9	2.71	3.22	.51
Chemistry......	12	15	3.00	3.40	.40
U.S. History...	11	15	2.73	2.93	.20
Spanish I......	10	6	3.00	3.19	.19
French I.......	6	8	2.33	2.48	.15
English II.....	9	14	2.22	2.29	.07

School "C" there seems to be a pronounced tendency for the girls to have a more favorable attitude towards English and the foreign languages, while the boys tend to favor mathematics, sciences and social studies.

Table 33. SUBJECTS WHICH THE GIRLS OF SCHOOL "C" JUDGED MORE INTERESTING THAN DID THE BOYS

Subject (1)	No. of Boys (2)	No. of Girls (3)	Mean value Boys (4)	Mean value Girls (5)	Mean difference (6)
English I......	11	8	3.63	2.38	1.15
English IV.....	17	9	4.06	3.22	.84
English III....	13	11	3.92	3.27	.65
English II.....	9	14	3.78	3.14	.64
Biology........	12	11	3.00	2.46	.54
French I.......	6	8	2.16	1.75	.41
Latin I........	8	10	2.65	2.30	.35
Business Mathematics........	15	7	3.93	3.93	.07

Table 34. SUBJECTS WHICH THE BOYS OF SCHOOL "C" JUDGED MORE INTERESTING THAN DID THE GIRLS

Subject (1)	No. of Boys (2)	No. of Girls (3)	Mean interest Boys (4)	Girls (5)	Mean difference (6)
Geometry I.....	9	8	2.55	5.88	3.33
General Science	8	16	2.00	3.81	1.81
U.S. History...	11	15	2.82	3.73	.91
Algebra II.....	9	7	4.33	5.14	.81
Chemistry......	12	15	2.58	3.13	.55
Algebra I......	17	9	2.88	3.33	.45
Problems of Democracy.....	13	12	2.77	3.16	.39
Latin I........	4	9	2.00	2.33	.33

Table 35. SUBJECTS WHICH THE GIRLS OF SCHOOL "C" JUDGED LESS DIFFICULT THAN DID THE BOYS

Subject (1)	No. of Boys (2)	No. of Girls (3)	Mean difficulty Boys (4)	Girls (5)	Mean difference (6)
English I......	11	8	2.63	4.88	2.25
Spanish I......	10	6	3.80	5.83	2.03
Latin II.......	4	9	2.75	4.44	1.69
French I.......	6	8	3.33	5.00	1.67
English III....	13	11	3.00	4.64	1.64
Latin I........	8	10	2.75	4.30	1.55
Biology........	12	11	4.83	6.36	1.53
Business Mathematics........	15	7	3.67	4.69	.62
English II.....	9	14	3.78	4.21	.43
English IV.....	17	9	3.59	3.78	.19

Tables 35 and 36 offer a comparison of the difficulty judgments of boys and girls of School "C". The subjects on these two tables are listed according to the greatest dif-

ference between the boys and girls mean difficulty ratings. The girls judged English I, Spanish I, Latin II, French I, English III, Latin I, and Biology significantly less difficult than did the boys while the boys judged Geometry I, Algebra II and General Science much less difficult than did the girls.

Table 36. SUBJECTS WHICH THE BOYS OF SCHOOL "C" JUDGED LESS DIFFICULT THAN DID THE GIRLS

	No. of	No. of	Mean difficulty		Mean
Subject	Boys	Girls	Boys	Girls	difference
(1)	(2)	(3)	(4)	(5)	(6)
Geometry I.....	9	8	2.55	5.88	3.33
General Science	8	16	2.00	3.81	1.81
U.S. History...	11	15	2.82	3.73	.91
Algebra II.....	9	7	4.33	5.14	.81
Chemistry......	12	15	2.58	3.13	.55
Algebra I......	17	9	2.88	3.33	.45
Problems of Democracy.....		12	2.77	3.16	.39
Latin I........	4	9	2.00	2.33	.33

Table 37 compares the total mean scores of 237 girls and 216 boys. It will be noticed that the girls of School "C" expressed a slightly more favorable attitude toward the value, interest and difficulty of their subjects than did the boys, however, the difference is probably too small to be statistically significant.

A comparison of the value, interest and difficulty judgments of students following the College, Business and

Table 37. A COMPARISON OF THE TOTAL MEAN SCORES OF 237 GIRLS AND 216 BOYS FROM SCHOOL "C"

Attitude (1)	Mean of girls scores (2)	Mean of boys scores (3)
Mean Value.......	2.49	2.73
Mean Interest...	3.12	3.05
Mean Difficulty.	4.05	3.93

General Curriculums.-- Table 38 compares the total mean scores obtained by all of the students following either the College, General or Business Curriculums. The students following the College Curriculum judged their subjects to be slightly more valuable than the other students. The students following the Business Curriculum judged their subjects to be less difficult. The important thing portrayed by tables 37 and 38 is that the boys and girls, and the students following the College General and Business Curriculums as groups have nearly the same attitudes towards the value, interest and difficulty of the subjects that they are taking.

Table 38. A COMPARISON OF THE TOTAL MEAN SCORES OBTAINED BY THE STUDENTS FOLLOWING THE GENERAL, COLLEGE AND BUSINESS CURRICULUMS

Curriculum (1)	No. Students (2)	Mean Value (3)	Mean Interest (4)	Mean Difficulty (5)
General........	144	2.70	2.98	3.75
College........	235	2.41	2.95	3.83
Business.......	83	2.69	2.83	4.23

The Statistical Treatment of the Combined Scores Obtained By Administering "A Scale for Measuring Attitude Toward School Subjects", To the Students of Three Massachusetts High Schools

A summary of the groups sampled.-- A complete description of the three high schools cooperating in this study has been given in the previous sections of this chapter. The high schools are examples of the better type of small secondary schools found in many Massachusetts communities. There is little doubt but what these high schools are better equipped, better supported financially and more alert to the educational needs of their students than the average schools of the same size. As a whole the students represent a higher socio-economic group than the average secondary school population. A rather large percentage of these students plan tp pursue more advanced educational fields once their high school work is completed.

The students in the three high schools responded to a total of 1364 scales, Of this number 744 were completed by girls and 584 by boys. Thirty-six did not signify their sex. The students following the college preparatory curriculum completed 834 scales, the general curriculum students 354 and the business preparatory students filled out 161 scales. Fifteen students did not signify which curriculum they were following.

A description of how the scores were combined.-- The

scores from the three schools were combined to give the total Value, Interest and Difficulty scores for each subject. The mean of the total combined scores was found for each subject. The mean for the combined subject scores was computed for both boys and girls and for the students following the college, general and business curriculums.

The combined mean scale ratings for value, interest and difficulty.-- Table 39 shows the mean value rating of the combined scores for the twenty-four subjects surveyed in this study. The subjects are arranged in the order that the mean scores place them in value. English III, English I, and English II were judged the most valuable, while Spanish I, French II, General Science and Geometry were judged the least valuable.

Table 40 offers a comparison of the total mean interest scores for the twenty-four subjects, sampled in the three high schools. Home Economics, Physics, Biology and Shopwork were judged to be the most interesting while English II, English IV, Geometry and Business Mathematics were found to be the least interesting.

Little or no relationship can be observed between the interest and value judgments of the students. There was a tendency for the English courses to rank high in value and low in interest. Geometry and Business Mathematics occupied a low position on both the Value and Interest Tables. Table

Table 39. THE COMBINED MEAN VALUE SCORES OBTAINED FOR TWENTY-FOUR SUBJECTS SAMPLED IN THREE MASSACHUSETTS HIGH SCHOOLS

Subject (1)	Number of students (2)	Mean value scores (3)
English III....	72	1.79
English I......	61	1.89
English II.....	72	2.06
Shopwork.......	32	2.13
Latin II.......	70	2.19
Shorthand II...	31	2.23
Typing II......	34	2.24
Physics........	41	2.39
Home Economics.	49	2.41
Chemistry......	72	2.43
Latin I........	67	2.47
English IV.....	62	2.53
Algebra I......	62	2.56
U.S. History...	75	2.62
French I.......	37	2.74
Biology........	67	2.78
Problems of Democracy.....	54	2.80
Algebra II.....	58	2.81
Business Mathematics........	48	2.98
Bookkeeping I..	38	3.05
Spanish I......	50	3.12
French II......	43	3.12
General Science	73	3.14
Geometry I.....	61	3.36

41 shows the rank order correlation when the arrangement of the subjects on the Value and Interest Tables were compared. The Spearman formula for finding rank correlation was used in computing the correlation coefficient. Many statisticians

Table 40. THE COMBINED MEAN INTEREST SCORES OBTAINED FOR TWENTY-FOUR SUBJECT SAMPLED IN THREE MASSACHUSETTS HIGH SCHOOLS

Subject (1)	Number of students (2)	Mean interest scores (3)
Home Economics.	49	2.17
Physics........	41	2.34
Biology........	67	2.36
Shopwork........	32	2.44
Chemistry.......	72	2.53
Typing II.......	34	2.59
English III....	72	2.78
General Science	73	2.79
Spanish I......	50	2.88
Latin I........	67	2.89
Latin II.......	70	2.91
French II......	43	2.91
English I......	61	2.92
Shorthand II...	31	2.94
French I.......	37	2.98
Algebra I......	62	2.98
Problems of Democracy.....	54	3.00
U.S. History...	75	3.04
Algebra II.....	58	3.36
Bookkeeping I..	38	3.40
English II.....	72	3.56
English IV.....	62	3.61
Geometry.......	61	3.61
Business Mathematics........	48	3.82

do not look with favor upon the use of assigned ranks but Mode[1] states, "The use of ranks is advantageous when the variates cannot be assigned definite numerical magnitudes

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[1] Elmer B. Mode, The Elements of Statistics, Prentice-Hall, Inc. New York : 1946, Page 312.

but may be assigned positions in an ordered series." The correlation coefficient of the rank order relationship between estimated value and interest was + .34, which confirms our general observation that there was little relationship between estimated value and estimated interest in the twenty-four subjects sampled.

Table 41. THE RANK ORDER RELATIONSHIP BETWEEN ESTIMATED VALUE AND INTEREST FOR TWENTY FOUR SUBJECTS SAMPLED IN THREE MASSACHUSETTS SECONDARY SCHOOLS

Subject (1)	Ranked Value (2)	Ranked Interest (3)	d- x-y (4)	d^2 (5)
English III....	1	7	- 6	36
English I......	2	13	-11	121
English II.....	3	21	-18	324
Shopwork.......	4	4	0	36
Latin II.......	5	11	- 6	64
Shorthand......	6	14	- 8	1
Typing.........	7	6	1	36
Physics........	8	2	6	64
Home Economics.	9	1	8	25
Chemistry......	10	5	5	1
Latin I........	11	10	1	100
English IV.....	12	22	-10	9
Algebra I......	13	16	- 3	16
U.S. History...	14	18	- 4	169
French I.......	15	15	0	1
Biology........	16	3	13	25
Problems of Democracy.....	17	17	0	00
Algebra II.....	18	19	1	1
Business Mathematics.......	19	24	- 5	25
Bookkeeping....	20	20	0	00
Spanish I......	21	9	12	144
French II......	22	12	10	100
General Science	23	8	15	225
Geometry.......	24	23	1	1
				1518

Table 41. concluded

$(rho) = \frac{6 \quad d^2}{N(N^2-1)}$	$(rho) = 1 - \frac{6(1518)}{24(576-1)}$	$(rho) = + .34$

Table 42 offers a comparison of the students judgments concerning the difficulty of the subjects they were taking. The subjects are arranged on the table from the most difficult to the least difficult. Latin I, Algebra II, Geometry I and Latin II were judged the most difficult while Biology, Problems of Democracy, Home Economics, and Typing II were judged the least difficult.

Little or no relationship can be observed between the difficulty and value judgments of the students. Table 43 shows the rank order correlation when the arrangement of the subjects on the Difficulty and Value tables were compared. Using the Spearman formula we find that there is a rank order correlation of only + .02. This indicates that the students do not consider the ease or difficulty of a subject when judging its value.

A negative correlation of -.24 was found when the rank order arrangement of the subjects on the Difficulty and Interest tables were compared. This indicates that there is a slight tendency for the less difficult subjects to be found

Table 42. THE COMBINED MEAN DIFFICULTY SCORES OBTAINED FOR TWENTY FOUR SUBJECTS SAMPLED IN THREE MASSACHUSETTS HIGH SCHOOLS

Subject (1)	Number of students (2)	Mean difficulty scores (3)
Latin I........	67	2.67
Algebra II.....	58	2.67
Geometry I.....	61	2.73
Latin II.......	70	2.89
English III....	72	2.94
French I.......	37	3.03
Chemistry......	72	3.06
Bookkeeping I..	38	3.23
Shorthand II...	31	3.29
French II......	43	3.33
U.S. History...	75	3.35
Physics........	41	3.41
Algebra I......	62	3.63
Shopwork.......	32	3.66
English II.....	72	3.82
English I......	61	3.84
Business Mathematics........	48	3.96
English IV.....	62	3.98
General Science	73	4.03
Spanish I......	50	4.04
Biology........	67	4.46
Problems of Democracy.....	54	4.54
Home Economics.	49	4.86
Typing II......	34	5.03

interesting. The correlation, however, is too small to be predictive of a significant relationship. Table 44 shows how this correlation coefficient was arrived at.

A comparison of the subjects judged most valuable, interesting and difficult by the boys and girls when the totals

Table 43. THE RANK ORDER RELATIONSHIP BETWEEN ESTIMATED VALUE AND DIFFICULTY FOR TWENTY FOUR SUBJECTS SAMPLED IN THREE MASSACHUSETTS SECONDARY SCHOOLS

Subject (1)	Ranked Value (2)	Ranked Difficulty (3)	d= x-y (4)	d^2 (5)
English III....	1	5	- 4	16
English I......	2	16	-14	196
English II.....	3	15	-12	144
Shopwork.......	4	14	-10	100
Latin II.......	5	4	1	1
Shorthand II...	6	9	- 3	9
Typing II......	7	24	-17	289
Physics........	8	12	-04	16
Home Economics.	9	23	-04	16
Chemistry......	10	7	3	9
Latin I........	11	1	10	100
English IV.....	12	18	- 6	36
Algebra I......	13	13	0	00
U.S. History...	14	11	3	9
French I.......	15	6	9	81
Biology........	16	21	- 5	25
Problems of Democracy.....	17	22	- 5	25
Algebra II.....	18	2	16	256
Business Mathematics........	19	17	2	4
Bookkeeping I..	20	8	12	144
Spanish I......	21	20	1	1
French II......	22	10	12	144
General Science	23	19	4	16
Geometry.......	24	3	21	441
				2078

$(rho)= 1- \frac{6\ d^2}{N(N^2-1)}$ $(rho)= 1- \frac{6(2078)}{24(576-1)}$ $(rho)- +.02$

for all schools are combined.-- Tables 45 and 46 offer a comparison of the value judgments of all the boys and girls in the three Massachusetts high schools. The girls judged Latin II, Problems of Democracy and French I to be much more valuable than did the boys while the boys judged Physics and Geometry to

Table 44. THE RANK ORDER RELATIONSHIP BETWEEN ESTIMATED INTEREST AND DIFFICULTY FOR TWENTY FOUR SUBJECTS SAMPLED IN THREE MASSACHUSETTS SECONDARY SCHOOLS

Subject (1)	Ranked interest (2)	Ranked difficulty (3)	d = x-y (4)	d^2 (5)
Home Economics.	1	23	-22	484
Physics........	2	12	-10	100
Biology........	3	21	-18	324
Shopwork.......	4	14	-10	100
Chemistry......	5	7	- 2	4
Typing II......	6	24	-18	324
English III....	7	5	2	4
General Science	8	19	-11	121
Spanish I......	9	20	-11	121
Latin I........	10	1	9	81
Latin II.......	11	4	7	49
French II......	12	10	2	4
English I......	13	16	- 3	9
Shorthand II...	14	9	5	25
French I.......	15	6	9	81
Algebra I......	16	13	3	9
Problems of Democracy.....	17	22	- 5	25
U.S. History...	18	11	7	49
Algebra II.....	19	2	17	289
Bookkeeping I..	20	8	12	144
English II.....	21	15	6	36
English IV.....	22	18	4	16
Geometry.......	23	3	20	400
Business Mathematics........	24	17	7	49
				2848

$$(\text{rho}) = 1 - \frac{6\ d^2}{N(N^2-1)} \qquad (\text{rho}) = 1 - \frac{6(2848)}{24(576-1)} \qquad (\text{rho}) = -.24$$

be significantly more valuable than did the girls. It seems significant that the boys tended to judge mathematics and the sciences more valuable than did the girls while the girls

Table 45. SUBJECTS WHICH THE GIRLS OF THREE MASSACHUSETTS HIGH SCHOOLS JUDGED MORE VALUABLE THAN DID THE BOYS

Subject (1)	No. of Boys (2)	No. of Girls (3)	Mean value Boys (4)	Mean value Girls (5)	Mean difference (6)
Latin II........	26	44	2.62	1.20	1.42
Problems of Democracy......	23	30	3.39	2.03	1.36
French I........	19	16	3.11	1.93	1.18
French II.......	15	25	3.67	2.92	.75
English I.......	30	31	2.17	1.52	.65
English III.....	32	38	2.22	1.76	.46
Latin I.........	29	35	2.72	2.31	.41
English II......	29	40	2.24	1.93	.31
U.S. History....	33	42	2.79	2.60	.19
Spanish I.......	21	24	3.05	2.92	.13
Business Mathematics.........	27	21	2.81	2.71	.10

Table 46. SUBJECTS WHICH THE BOYS OF THREE MASSACHUSETTS HIGH SCHOOLS JUDGED MORE VALUABLE THAN DID THE GIRLS

Subject (1)	No. of Boys (2)	No. of Girls (3)	Mean value Boys (4)	Mean value Girls (5)	Mean difference (6)
Physics.........	35	6	2.00	4.67	2.67
Geometry I......	28	32	2.79	3.84	1.05
Algebra II......	37	20	2.54	3.15	.61
Algebra I.......	34	28	2.32	2.86	.54
Chemistry.......	29	30	2.72	3.20	.52
Biology.........	28	35	2.79	2.94	.15

expressed a more favorable attitude towards the foreign language and English courses.

Tables 47 and 48 offer a comparison of the interest judgments of all the boys and girls in three Massachusetts high schools. The girls judged French I, French II, and Latin I to be much more interesting than did the boys, while the boys judged Physics, Chemistry and General Science to be much more interesting than did the girls. The same general relationship was found in the interest judgments as was found in the value judgments for the boys expressed the more favorable attitude towards mathematics and the sciences while the girls expressed the more favorable attitudes towards foreign languages and English courses.

Table 47. SUBJECTS WHICH THE GIRLS OF THREE MASSACHUSETTS HIGH SCHOOLS JUDGED MORE INTERESTING THAN DID THE BOYS

Subject	No. of Boys	No. of Girls	Mean interest Boys	Mean interest Girls	Mean difference
(1)	(2)	(3)	(4)	(5)	(6)
French I........	9	16	3.68	1.81	1.87
French II.......	15	25	3.67	2.44	1.23
Latin I.........	29	35	3.48	2.51	.97
English III....	32	38	3.75	3.00	.75
Latin II.......	26	44	3.38	2.64	.74
English I......	30	31	3.47	2.81	.66
Problems of Democracy.....	23	30	3.35	2.80	.55
English II.....	29	40	3.37	2.83	.54
English IV.....	26	36	3.88	3.42	.46

Tables 49 and 50 offer a comparison of the difficulty

Table 48. SUBJECTS WHICH THE BOYS OF THREE MASSACHUSETTS HIGH SCHOOLS JUDGED MORE INTERESTING THAN DID THE GIRLS

Subject	No. of Boys	No. of Girls	Mean interest Boys	Mean interest Girls	Mean difference
(1)	(2)	(3)	(4)	(5)	(6)
Physics........	35	6	2.20	3.33	1.13
Chemistry......	29	30	2.21	3.33	1.12
General Science	37	30	2.35	3.47	1.12
Algebra II.....	37	20	2.73	3.60	.87
Geometry I.....	28	32	3.21	3.91	.70
Spanish I......	21	24	2.71	3.21	.50
U.S. History...	33	32	2.79	3.27	.48
Business Mathematics........	27	21	4.18	4.38	.20

Table 49. SUBJECTS WHICH THE GIRLS OF THREE MASSACHUSETTS HIGH SCHOOLS JUDGED LESS DIFFICULT THAN DID THE BOYS

Subject	No. of Boys	No. of Girls	Mean difficulty Boys	Mean difficulty Girls	Mean difference
(1)	(2)	(3)	(4)	(5)	(6)
Latin I........	29	35	2.07	3.14	1.07
Latin II.......	26	44	2.27	3.25	.98
English I......	30	31	3.43	4.24	.81
French II......	15	25	2.80	3.56	.76
English IV.....	26	36	3.62	4.25	.63
English II.....	32	38	3.34	3.97	.63
Spanish I......	21	24	3.52	3.96	.44
English II.....	29	40	4.07	3.72	.35
French I.......	19	16	3.37	3.44	.07

judgments of the 744 scales completed by the girls and the

584 scales completed by the boys. The girls judged Latin I, Latin II and English I to be much less difficult than did the boys while the boys judged Geometry I, Physics, Algebra II and Algebra I to significantly less difficult than did the girls.

Table 50. SUBJECTS WHICH THE BOYS OF THREE MASSACHUSETTS HIGH SCHOOLS JUDGED LESS DIFFICULT THAN DID THE GIRLS

Subject	No. of Boys	No. of Girls	Mean difficulty Boys	Mean difficulty Girls	Mean difference
(1)	(2)	(3)	(4)	(5)	(6)
Geometry.......	28	32	4.18	2.46	1.72
Physics........	35	6	3.60	2.33	1.27
Algebra II.....	37	20	3.29	2.25	1.04
Algebra I......	34	28	3.94	3.11	.83
Problems of Democracy.....	23	30	4.91	4.23	.68
Business Mathematics........	27	21	4.19	3.67	.52
U.S. History...	33	42	4.12	3.93	.19
Chemistry......	29	30	3.89	3.73	.13
Biology........	28	35	4.79	4.66	.13

Table 51 compares the total mean scores of the boys and girls when all the scores for the separate subjects are combined. The girls judged the subjects they were taking to be slightly more valuable than did the boys the subjects they were taking. The difference of .20 is very small when the total seven point scale is considered. The girls judged their subjects to be slightly more interesting than did the boys

the subjects they were taking. The difference of .20 is identical with that obtained for value. The boys judged the subjects they were taking to be less difficult than did the girls but the difference of .08 is too small to indicate more than a possible tendency.

Table 51. A COMPARISON OF THE TOTAL MEAN SCORES OF THE BOYS AND GIRLS WHEN ALL THE SCORES FOR THE SEPARATE SUBJECTS ARE COMBINED

Attitude (1)	Mean of all girls scores (2)	Mean of all boys scores (3)
Mean Value......	2.49	2.69
Mean Interest...	2.88	3.08
Mean Difficulty.	3.76	3.84

A comparison of the value, interest and difficulty judgments of students following the College, Business and General Curriculums.-- Table 52 compares the total mean scores obtained by all the students following either the College, General or Business Curriculums. The students following the College Preparatory Curriculums judged their subjects to be slightly more valuable and interesting than did the students from the other curriculums, while the students following the Business Preparatory Curriculums judged their subjects to be less difficult than did the other

students. The differences in each instance are too small to be more than suggestive of a possible tendency.

Table 52. A COMPARISON OF THE TOTAL MEAN SCORES OBTAINED BY ALL STUDENTS FOLLOWING EITHER THE GENERAL, COLLEGE OR BUSINESS CURRICULUMS

Curriculum (1)	No. Students (2)	Mean Value (3)	Mean Interest (4)	Mean Difficulty (5)
College......	834	2.53	2.88	3.53
General......	354	2.59	3.00	3.65
Business.....	161	2.64	3.05	3.99

The Relationship Between Mid-Semester Marks Received In A Course and the Students Judgment of the Value, Interest, and Difficulty of the Course

The relationship between marks and judgments of a subject's value.-- The value scores for each student receiving an "A" in a subject were combined for all subjects and the total mean Value score was computed. The same procedure was used to determine the mean value for B's, C's, D's, E's, F's and for those who did not signify the mark that they had received.

Table 53 offers a comparison of the relationship between marks received and the corresponding judgments of a subject's value. The table shows clearly that the students receiving the highest marks expressed a higher judgment of a subject's value than the students receiving a lower mark. The students that did not signify the marks received in a course had a mean value judgment score of 3.37, which indicated that it was not necessarily the students that received the lowest marks who failed to report them on the questionnaire.

The relationship between marks and judgments of a subject's interest.-- The same method was used to compute the mean interest scores for all marks of A, B, C, D, E, F and for students not reporting their marks as is explained in the previous section.

Table 54 compares the relationship between marks received

Table 53. A COMPARISON OF THE TOTAL MEAN VALUE SCORES COMPUTED FOR EACH MID-SEMESTER MARK

Marks (1)	Number of students receiving each mark (2)	Mean Value score for mark (3)
A	179	2.11
B	447	2.67
C	426	3.25
D	157	3.25
E	1	----
F	47	3.80
No Mark	103	3.37

in a course and corresponding judgments of subject's interest. There is a clear indication that the students receiving the highest marks judge the subjects more interesting than do the students receiving lower marks.

Table 54. A COMPARISON OF THE TOTAL MEAN INTEREST SCORES COMPUTED FOR EACH MID-SEMESTER MARK

Marks (1)	Number of students receiving each mark (2)	Mean Value score for mark (3)
A	177	1.85
B	465	2.25
C	421	2.68
D	153	3.46
E	3	4.33
F	44	3.41
No mark	101	2.89

The relationship between marks and judgments of a subject's difficulty.-- Table 55 compares the mean difficulty scores for each mid-semester mark. Here as in the comparisons between marks and Value or Interest we see there is a definite tendency for the students receiving the highest marks to judge the subjects less difficult than the students receiving the lower marks.

Table 55. A COMPARISON OF THE TOTAL MEAN DIFFICULTY SCORES COMPUTED FOR EACH MID-SEMESTER MARK

Marks (1)	Number of students receiving each mark (2)	Mean Difficulty score for each mark (3)
A	181	4.43
B	454	4.48
C	432	3.68
D	158	2.82
E	1	----
F	45	2.07
No mark	94	3.23

The Rank-Order Relationship Between the Ranking of Subjects for Interest, Value, Difficulty in Three Massachusetts Secondary Schools

The method used to compute the relationship.-- The arrangement of subjects on the Value, Interest and Difficulty tables of the three school were compared by using the Spearman formula for determining the rank order correlation between the different tables.

A comparison of the order in which twenty-four secondary school subjects were ranked in three Massachusetts secondary schools.-- A rank order coefficient of correlation of + .11 when the arrangement of subjects on the Value tables for schools "A" and "B" were compared. Both these coefficients of correlation are positive and low which indicates that there is only a very slight tendency for subjects to be judged of equal value in different schools. This would seem to indicate that some factor of factors other than the specific material included in a course influences the students judgments of a subject's value. There are, however, several general trends in the arrangement of subjects on the Value tables that are significant. The four English courses occupied relatively high positions on the Value tables of all three schools, while Geometry I occupied a low position on all Value tables.

A rank-order coefficient of correlation of + .12 was

obtained when the arrangement of subjects on the Interest tables for schools "A" and "C" were compared. The coefficient of correlation was + .38 when the arrangement of subjects on the Interest tables for schools "B" and "C" were compared. These two positive relationships indicate that there is a tendency, although small, for subjects to be judged of the same relative interest in the different schools. The correlation coefficient between schools "A" and "C" are very low indicating only a very slight tendency for the two schools to place subjects in the same relative position on tables of interest. The positive relationship between schools "B" and "C" is more apparent and indicates that there is a greater tendency for the students of schools "B" and "C" to judge subjects of the same interest than there is for the students of schools "A" and "C". Here again there seems to be some factor or factors other than the material contained in a course that influences the students' judgment of a subject's degree of interest.

The coefficient of correlation was + .58 when the arrangement of subjects on the Difficulty table of schools "A" and "B" were compared. A correlation of +.37 was obtained when the Difficulty tables of schools "B" and "C" were compared. These coefficients of correlation are significantly higher than were obtained when the Value and Interest

tables of the three schools were compared. This seems to indicate that the students of the different schools tend to agree that certain subjects are more difficult than others and to place these subjects near the same relative positions on scales of difficulty.

CHAPTER V

SUMMARY AND CONCLUSIONS

The problem.-- The purpose of this study was to determine the attitude of students toward the value, degree of interest and difficulty of subjects they were studying in secondary school, and to discover the relationship between these judgments and the sex of the students, the curriculum the students were following and the consistency of these judgments from school to school.

The scope of the study.-- "A Scale to Measure the Attitude of Students Toward Their School Subjects," was constructed and administered to the students in three Massachusetts secondary schools. A total of 1364 scales were completed by these students, of which 744 were completed by girls, and 584 by boys. The students following the College Preparatory Curriculum completed 834 scales, the Business Preparatory students completed 161 scales and the students taking the General Curriculum completed 354 scales. No tabulation was kept of the number of separate individuals taking part in this study but the study was so conducted that the majority of the students in each school completed one or more of

the scales.

The mean scores for Value, Interest and Difficulty were computed for each subject and for each school. The totals for all schools were combined to obtain the total mean value scores for each subject. The mean scores for boys and girls were computed and compared as were the mean scores for the college, business and general curriculums. Rank-order correlations were computed to compare the order of placement of subjects on the Value, Interest and Difficulty tables of three schools.

Major findings and conclusions.-- English III, English I, English II, Shopwork and Latin II were judged the five most valuable subjects, while Bookkeeping I, Spanish I, French II, General Science and Geometry I were judged the least valuable subjects when the total for all schools were combined. The four English courses occupied high positions and Geometry I occupied a low position on the tables of Value for all three schools. Latin I and II were judged to be the most valuable of the foreign languages.

Home Economics, Physics, Biology, Shopwork and Chemistry were judged the most interesting, while Bookkeeping I, English II, English IV, Geometry I and Business Mathematics were judged the least interesting when the totals for all schools were combined. Although,

the English courses ranked high in value there was a tendency for them to rank low in interest. The rank-order coefficient of correlation between the arrangement of subjects on the total value and Interest tables was +.34 which indicates that there is some relationship, although small, between the estimated value and degree of interest of a subject. The low correlation, probably, indicates that the students are able to see the value in their subjects even if a subject may tend to be uninteresting.

Latin I, Algebra II, Geometry I, Latin II and English III were judged to be the most difficult, while Spanish I, Problems of Democracy, Home Economics and Typing II were judged to be the least difficult. The rank-order coefficient of correlation between the arrangement of subjects on the total Value and Difficulty tables was +.02 which indicated that there is not relationship between the value a student sees in a subject and his estimate of its difficulty. The rank-order coefficient of correlation between ranked interest and ranked difficulty was -.24, which indicates that there is a negative relationship between the two. It signifies that there is a tendency, although slight, for subjects judged less difficult to be judged higher for degree of interest than the more difficult subjects.

The girls express a more favorable attitude than the boys towards English and foreign languages. The boys tended to express a more favorable attitude than the girls towards science and mathematical courses. Some of the differences between the expressed subject-attitudes of the boys and girls were very small while others were large and more significant.

The difference between the total mean scores of all boys and girls for all subjects was small but perhaps significant. The girls judged their subjects to be slightly more valuable and interesting than did the boys, but the boys judged their subjects to be easier than did the girls. From this we may conclude that the girls seem to express a more favorable attitude towards their school subjects than do the boys but the differences are so small that school teachers and school administrators need not be concerned about it.

The differences between the total mean scores for the students following the College, General or Business Curriculums are so small that they indicate that the students of no one curriculum had a more favorable attitude towards their school subjects than did the students of the other curriculums.

* The students receiving the highest marks expressed significantly more favorable attitudes toward their

schools subjects than the students receiving lower marks. They judged the subjects to be more valuable, interesting and less difficult than did the students reporting lower marks. This should be expected for most of us prefer to take part in activities where we experience real success.

The results of this study seem to indicate conclusively that the students in the schools surveyed express favorable attitudes toward the value, interest and difficulty of their subjects. None of the twenty-four subjects sampled in this survey received a total mean scale rating of below 3.36 for value, 3.82 for interest or above 2.67 for difficulty. This indicates that when all the scores were combined for the 1364 scales, all subjects were judged to be of more than average value, more than average interest and neither too difficult nor too easy. Of the scales completed only 150 or 11 per cent judged the subjects to be of less than average value, 14 per cent or 191 judged the subjects to be less than average interest, while 25 per cent judged their subjects to be of less than average difficulty and 39 per cent judged the subjects to be of more than average difficulty.

Significantly high coefficients of correlation were obtained when the Difficulty tables of the different schools were compared. These high correlations indicate

that the students of the different schools tend to agree that certain subjects are more difficult than others and to place these subjects near the same relative positions on scales of difficulty.

Little or no relationship was found between the Value or Interest judgments of the different schools. School "A" placed United States History in the twentieth position on the Value table, school "B" placed in sixth position and school "C" placed in thirteenth position. This is a typical example of the wide differences found on the Interest and Value tables of the three schools. The low rank-order coefficients of correlation obtained when ranking of subjects for value or interest in the three schools suggests that there is some factor or factors other than the material contained in the courses that influences the students attitude toward his school subjects. Further study in this area might determine the factors that influence the students attitude toward his high school courses.

The fact that some other factor other than the material in the course strongly influences the attitude of students toward his school subjects should be a challenge for all teachers and for students who are studying for teaching. It means that any subject can be made valuable, interesting and of challenging difficulty

if the course is organized to meet the individual needs and interests of the students and better methods of teaching are employed. The teacher who rationalizes by saying that no one can make this dry "old stuff" interesting or worthwhile must wake up to the realization that it is not the subject that is uninteresting and valueless.

A SCALE FOR MEASURING ATTITUDE TOWARD SCHOOL SUBJECTS

Directions:

Write in the blanks below: your grade, the curriculum that you are following this year, the mid-semester mark that you received, and your age. Your teacher will tell you the name of the subject or course that you are to write in the blank labeled, Subject or Course.

Grade________Curriculum__________Subject or Course________

Mid-semester mark received in this subject or course____

Underscore: Boy, Girl   Your age to nearest birthday?

________years

This is a study to determine how you feel about your school subjects. Read all seven statements in each section; then make a check mark before the statement in each section that most nearly describes the way you feel about the subject named by your teacher. Be sure to make a check mark before one statement in each of the three sections of this inventory. Feel free to make your own comments if time permits.

Section I

Value Scale

A subject or course is valuable to the extent that it is useful, to the extent that it affords you pleasure, to the extent that it aids you to better understand the environment and society in which you live, or to the extent that it will aid you in earning a living. How valuable do you consider this subject?

_____1. This is one of the most valuable subjects that I have ever taken.

_____2. This subject is very valuable but there are others that are more valuable.

_____3. This subject is of more than average value.

_____4. This subject is of average value.

_____5. This subject has some value but most subjects have more value.

_____6. This subject is very low in value but there are others that have less value.

_____7. This is one of the least valuable subjects that I have ever taken.

Section II

Interest Scale

A subject is interesting to the extent that it holds your attention, to the extent that it instills a desire for further study and to the extent that you enjoy working at it. How interesting is this subject?

_____1. This is one of the most interesting subjects that I have ever taken.

_____2. This subject is very interesting but there are others that are more interesting.

_____3. This subject is of more than average interest.

_____4. This subject is neither interesting nor boring. It is just in between.

_____5. This subject is dull most of the time but sometimes it is rather interesting.

_____6. This is a boring subject but there are others that are more boring.

_____7. This is one of the most boring subjects that I have ever taken.

Section III

Difficulty Scale

A subject is difficult to the degree

that it requires more effort, concentration and time than do most subjects. How difficult is this subject?

_____1. This is one of the most difficult subjects that I have ever taken.

_____2. This subject is very difficult but there are others that are more difficult.

_____3. This subject is of more than average difficulty.

_____4. This subject is neither easy nor difficult. It is just in between.

_____5. This subject is easy more often than it is difficult.

_____6. This subject is easy but there are others that are easier.

_____7. This is one of the easiest subjects that I have ever taken.

Principals:

Below are listed the twenty-four subjects or courses upon which the study to determine the attitude of students toward their school subjects is to be based. In parenthesis are suggested curriculum groups which might receive the scale. These curriculum groups are only suggestions and you are free to administer the scale to any section that you wish providing it is taking one of the twenty-four subjects listed.

1. English I (college preparatory section)
2. English II (civic or vocational section)
3. English III (college preparatory section)
4. English IV (civic or vocational section)
5. U.S. History (college preparatory section)
6. Problems of Democracy or Civics (civic or vocational section)
7. General Science (civic or vocational section)
8. Biology (any section)
9. Chemistry (any section)
10. Physics (any section)
11. Shopwork (any junior or senior section)
12. Home Economics (any junior or senior section)
13. Business Math. (civic or vocational section)
14. Bookkeeping I (vocational section)
15. Shorthand II (vocational section)
16. Typing II (vocational section)
17. Latin I (college preparatory section)
18. Latin II (college preparatory section)
19. French I (any section)

20. French II (any section)

21. Spanish I (any section)

22. Algebra I (civic section if there is one, otherwise, any section)

23. Algebra II (college preparatory section)

24. Geometry (any section)

Teachers' Directions for Administering "A Scale for Measuring Attitude Toward School Subjects"

Please administer these scales to a section taking __________________.

There are twenty-five scales in this package. If there are more than twenty-five students in your section you may ask those who do not receive a scale to do something else.

Ask the students to write ______________ opposite the blank labeled Subject or Course.

The students are not to write their names on their papers.

Allow the students about ten minutes to complete the scale.

Caution the students to be perfectly honest for the value of this study depends upon their complete honesty.

Teachers:

Please write in the space below any suggestions that you feel would make the scale easier to administer.

BIBLIOGRAPHY

Allport, Gordon W., "Attitudes," A Handbook of Social Psychology, Carl Murchison, Editor: Clark University Press, Worcester, Massachusetts 1935, Page 810.

Bateman, Richard M. "The Relationship Between Attitude Towards School Subjects and Certain Other Variables," Bulletin of Purdue University Studies in Higher Education XXVI, Directed and Edited by H. H. Remmers, Ph.D. December 1934, pp. 12-18

Beckham, Sidney Albert, "A Study of Race Attitudes of Negro Children of Adolescent Age, "The Journal of Abnormal and Social Psychology 29; May 1934, Page 18-29

Bently, Madison, The Field of Psychology, D. Appleton-Century Company Inc. 1935, Page 14-16.

Blair, Glenn C., "The Subject Preferences of Mentally Superior and Inferior High School Students,""The Journal of Educational Research 33: pp. 665-670

Billett, Roy O., "Provisions For Individual Differences Marking and Promotion:" National Survey of Secondary Education, Monograph #13, 1935, Page 59.

Corey, Stephan M. and George S. Berry, "The Effect of Teacher Popularity Upon Attitude Toward School Subjects," The Journal of Educational Psychology 295: December 1938, pp. 665-670.

Dunlap, John W., "Preferences as Indicators of Specific Academic Achievement," The Journal of Educational Psychology 26: November 1936, pp. 411-415.

Garrison, Karl C., "Adolescent Interests in Relation To Instruction," High School Journal 19: January 1936,p.14.

Glueck, Sidney and Eleanor T. Glueck, One Thousand Juvenile Delinquents, Harvard University Press, Cambridge, Massachusetts 1934, p. 321.

Katz, Daniel and Floyd Allport, Students' Attitudes, The Craftsman Press Inc. Syracuse, 1931, p. 353.

Katz, Daniel and Kenneth W. Braly, "Racial Prejudice Racial Stereotypes," The Journal of Abnormal and Social Psychology 30: February 1935, pp. 175-193.

Kilpatrick, William Head, *Foundations of Method*, The Macmillan Company, New York, 1932, p. 10.

Kingsley, Howard L. *The Nature and Conditions of Learning*, Prentice-Hall Inc., New York, 1946, pp. 309-425.

Koos, Leonard V., *Administering the Secondary School*, The World Book Company, New York, 1932, p. 10.

Mode, Elmer B., *The Elements of Statistics*, Prentice-Hall, Inc., New York: 1946, p. 312.

Mitchell, Claude , "Do Scales For Measuring Attitudes Have Any Significance," *The Journal of Educational Research*, 34: February 1946, pp. 445-452.

Nemoitan, Bernard O., "The Relation Between Achievement and Interest," *The Journal of Applied Psychology 16:* February 1932, pp. 59-73.

Osborn, L. G. "A Scale For Measuring The Relative Difficulty of High School Subjects," *The Journal of* Educational Research 33, September 1939 pp. 1-6.

Rothney, J. W. M., "The Interests of Public Secondary School Boys," *The Journal of Educational Psychology* 28: November 1937, pp. 561-594.

Sartain, A. Q. "The Relation of Marks in College Courses to the Degree of Interest, Value and Difficulty of the Courses," *The Journal of Educational Psychology* 36: September 1945, pp. 561-566.

Symonds, Percival M., *Diagnosing Personality and Con*duct, The Century Company, New York 1931, p. 79.

Thorndike, Edward L., "Interest and Abilities," *The Journal of Applied Psychology*, 28: February 1944, p.53.

Thurstone, L. L. and E. J. Chive, *The Measurement of Attitude*: A Psychophysical Method, The University of Chicago Press 1929, p. 517.

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